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**Evaluating Wireless Broadband and System
At California Safety Roadside Rest Areas**

Task Order 6100 Final Report

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The contents of this report reflect the views of the authors who are responsible for the facts and the accuracy of the data presented. The contents do not necessarily reflect the official views or policies of the State of California. This report does not constitute a standard, specification, or regulation.

Abstract

To meet the demand for Internet access by the traveling public, the California Department of Transportation (Caltrans) launched a field operational test of wireless Internet access (WiFi) at two Safety Roadside Rest Areas (SRRAs), Phillip S. Raine and Enoch Christoffersen, along State Route (SR) 99 in July 2007. In this report, researchers evaluate the potential of WiFi at California's SRRAs in order to make recommendations for future public agency participation in SRRA WiFi partnerships. A number of methods were used to gain insight into the potential of WiFi at SRRAs including (1) expert interviews with public agency representatives and private WiFi service providers to identify the range of possible business models and lessons learned to date; (2) focus groups conducted throughout California to understand the traveling public's need for WiFi services at SRRAs; (3) analysis of data that recorded the actual use of WiFi service at the pilot demonstration; and (4) a survey of the users of the WiFi pilot demonstration.

Executive Summary

To meet the demand for Internet access by the traveling public, the California Department of Transportation (Caltrans) launched a pilot demonstration of wireless Internet access (WiFi) at two Safety Roadside Rest Areas (SRRAs), Phillip S. Raine and Enoch Christoffersen, along State Route (SR) 99. SR 99 is a North/South route through the Central Valley of California. Caltrans and Coach Connect, Inc., the Internet service provider, launched the WiFi service on July 19, 2007 with a media event to increase public awareness of the available Internet access.

In this report, researchers evaluate the potential of WiFi at California's SRRAs in order to make recommendations for future public agency participation in SRRRA WiFi partnerships. A number of methods were used to gain insight into the potential of WiFi at SRRAs including (1) expert interviews with public agency representatives and private WiFi service providers to identify the range of possible business models and lessons learned to date; (2) focus groups conducted throughout California to understand the traveling public's need for WiFi services at SRRAs; (3) analysis of data that recorded the actual use of WiFi service at the pilot demonstration; and (4) a survey of the users of the WiFi pilot demonstration. These methods and key results are summarized below.

Business Model Analysis

Expert interviews were conducted with public agency staff and private companies involved in providing WiFi access at rest stops throughout the United States. The interviews were conducted to define the range of current business practices and to understand lessons learned from the early WiFi rest stop business models. The interviews were conducted during the Summer of 2007 and updated during the Spring of 2008. Experts associated with WiFi in the following states were interviewed: Connecticut, Florida, Illinois, Iowa, Kansas, Michigan, Minnesota, Nevada, New Mexico, North Carolina, North Dakota, Oregon, Texas, Vermont, and Washington.

The expert interviews indicated that the key components of the business models are costs, including equipment, installation, and operation, and revenue, including user fees and advertising. Four primary business models emerged from analysis, as described below.

- 1) Costs Paid by the WiFi Provider: This is commonly referred to as the “no [state] cost” model. The WiFi provider pays for equipment, installation, and operation costs and obtains revenue from user fees and/or advertising. Although this model minimizes costs to the state, some public costs are incurred, such as providing power at the rest stops, staff resources to manage the contracts, and staff time for additional oversight at the rest stops.
- 2) Costs Paid by a Third Party: This model operates with minimal cost to the state, but the WiFi service provider is not generating sufficient revenue from WiFi service to cover all operating costs. Instead, the rest stop WiFi service is provided as part of a broader business model that includes additional sources of revenue, such as a service plaza with food and fuel, the opportunity to service other WiFi hotspots with greater revenue potential, or rest stop WiFi that is included in a broader Internet service plan.
- 3) Costs Paid by the State: In this model, the state pays a private sector WiFi service provider to install and operate the WiFi service. The WiFi service is provided by the public sector as an amenity to assist travelers and improve safety. The service provider is a vendor under contract with the public agency.
- 4) Costs are Shared: This model allows for cost sharing between the public and private sector partners. The shared cost model is premised on safety benefits accruing to the public, such as improved access to road and weather conditions, but also provides an individual benefit, such as access to the Internet for personal and business email, for which a private service provider charges a fee.

Generally, revenue is allocated to the WiFi service provider, but in some instances the state also receives a share of the revenue. Two types of revenue streams are identified, including user fees and advertising, as described below.

- 1) User Fees: Often, states that charge a fee for service provide free access to travel related information or they provide a period of time free before the user is charged. User fee models

that provide some free access are believed to improve the likelihood of the traveling public receiving a benefit from the WiFi, by providing access to road, weather, or other travel information sites. Federal regulations appear to preclude states or vendors from charging fees for goods or services for anything other than telephones or vending machines at rest stops. See 32 CFR 752.5(g) and 23 CFR 752.89(c)(5) for restrictions on charging the public at state rest stops. Some states indicated, however, that they received permission to charge user fees for access to WiFi at rest stops as long as access to the initial web page and traveler information remained free.

- 2) Advertising Revenue: The ability of WiFi service providers to sell advertising appears to have varied greatly. Some report that the labor costs of selling advertising to local businesses are greater than revenue generated. Nevertheless, other WiFi providers appear to be having some success selling advertising. At the time this report was written, the WiFi providers that appear to be more successful at selling advertising may not be gaining sufficient revenue to cover operation costs. The ability of WiFi providers to attract advertising revenue may change over time if advertisers determine there is a benefit to advertising to travelers at rest stops and/or WiFi service providers are better able to efficiently target exit ramp businesses. It is possible that federal rules may restrict location and content of advertising at rest stops. See 23 CFR 752.7 regarding rules for advertising at state rest stops.

Focus Groups

To assess the public's interest in accessing WiFi at SRRAs, eight focus groups, including travelers that drove California highways for business, recreation, and commercial purposes, were conducted in the winter of 2007 throughout California. It is important to note that the focus group participants had not experienced WiFi access at SRRAs. Overall, enthusiasm for WiFi at SRRAs was limited, although many of the focus group participants noted that they might use it occasionally, if it were available. There was concern about the security of opening laptop computers at SRRAs and many indicated they would prefer to go to a coffee shop or other location to use the Internet. Many of the focus group participants indicated that they do travel with devices that connect to the Internet (laptop computers or Internet enabled cell phones). A couple of participants noted that they have air cards and do not need WiFi to access the Internet.

User Data Analysis

Data recording visitor use (frequency and duration by time of day) of the WiFi service provided at the two pilot demonstration SRRAs, collected by Coach Connect, were analyzed to provide insights into how visitors used the WiFi services from July 2007 through April 2008. The total estimated WiFi login events at both SRRAs was 15,629. At both sites, there were approximately 50 logins per day or over two logins per hour (based on 24 hours a day). This represents approximately 0.3 percent of all drivers stopping at the SRRAs, based on Caltrans' figure for the overall number of visitors to the SRRAs and the number of WiFi users during the pilot demonstration. During this time, 70.3 percent (or 10,988 logins) were recorded at Tipton and 29.7 percent (or 4,641 logins) were recorded at Turlock. Overall, use of the service remained fairly level over the ten-month period. Use was at a minimum at 5:00 am and a maximum from 2:00 pm to 5:00 pm each day. Weekends showed only a few less users than weekdays. Users were most likely to login for five to 20 minutes, although some users were on the system for multiple hours. Fourteen and a half percent of the users logged on more than once during the entire test period. Those who used the system three or more times during the test phase (ten months) had a longer median duration of use.

User Survey

Users of the WiFi pilot demonstration were surveyed from March through June 2008. Each user was asked to answer one of three multiple-choice questions before gaining general access to the Internet. The questions addressed the purpose of the user's current travel as well as reasons why the user was accessing the Internet at the SRRA or would access it, if there were a network of WiFi service available at all California SRRAs. Most users indicated that they were using or would use WiFi for business or personal email (65.3 and 72.0 percent, respectively). A significant number of users were also accessing or would access travel related information including road conditions, weather, or directions/maps (33.7 and 48.8 percent, respectively). It is important to note that a very small portion of rest stop visitors actually accessed the WiFi (0.3 percent). Therefore, the relatively high percentage of users noting travel information represented a small number of total rest stop visitors.

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I. Project Summary and Tasks

To meet the demand for Internet access by the traveling public, the California Department of Transportation (Caltrans) launched a field operational test of wireless Internet access (WiFi) at two Safety Roadside Rest Areas (SRRAs), Phillip S. Raine and Enoch Christoffersen along State Route (SR) 99. SR 99 is a North/South route through the Central Valley of California. Caltrans and Coach Connect, Inc., the Internet service provider, launched the service on July 19, 2007 with a media event to increase public awareness of the available Internet access.

During the pilot demonstration, the Internet service was provided free of charge and without time limits. In addition to general access to the Internet, the site provided transportation and safety information, such as emergency information, weather, and road conditions. The site also had historical information about the Central Valley as well as local tourist attractions and traveler services such as hotels and restaurants.

In this report, researchers evaluate the potential of WiFi at California's SRRAs in order to make recommendations for future public agency participation in SRRRA WiFi partnerships. A number of methods were used to gain insight into the potential of WiFi at SRRRA including (1) expert interviews with public agency representatives and private WiFi service providers to identify the range of possible business models and lessons learned to date; (2) focus groups conducted throughout California to understand the traveling public's need for WiFi services at SRRAs; (3) analysis of data that recorded the actual use of WiFi service at the pilot demonstration; and (4) a survey of the users of the WiFi pilot demonstration. The analysis considers the utility of WiFi access at SRRAs as a private benefit to individual travelers and from the perspective of a public agency providing a benefit to the traveling public. Findings and recommendations are provided in Section VI.

II. Business Model Analysis

Introduction

Data collection for the business model analysis consisted of a series of expert interviews with public agency staff throughout the United States and WiFi service providers who had experience planning and/or providing WiFi at roadside rest stops. All state agencies, interviewed in the summer of 2007, were providing, or actively considering, WiFi access at roadside rest stops. These states included Connecticut, Florida, Illinois, Iowa, Kansas, Michigan, Minnesota, Nevada, New Mexico, North Carolina, North Dakota, Oregon, Texas, Vermont, and Washington. The state representatives were generally from the state Department of Transportation (DOT), although in a few instances other agencies or quasi-public agencies were responsible for the rest stop WiFi. In some cases, private sector WiFi providers were businesses with a nationwide presence, while in other cases these were entities that existed just to provide the WiFi service for one state. Interview data were updated and confirmed in the spring of 2008. See Appendix A for state business model summaries.

The purpose of the interviews was to gain a stronger understanding of the critical components of the business models that were used to provide WiFi at roadside rest stops, with an emphasis on the allocation of costs and revenue between the public and private sector partners.

While the overall components of the business models remained the same between the initial expert interviews and the updated interviews, opinions and perspectives about the structure of a successful business model sometimes changed significantly. It is likely that opinions and perspectives will continue to change because the business models are still evolving.

Table 1 provides a summary of the status of the roadside rest stop WiFi in the states that were contacted for expert interviews. In a few states, the WiFi provider changed between the initial expert interviews and the update. Table 1 reflects data as of April 2008.

Table 1: WiFi Provider Summary Status (as of April 2008)

State	Number/Type	State Agency	Additional Partners	WiFi Provider
California	2 SRRAs	California DOT	Great Valley Center	Coach Connect
Connecticut	39 rest areas under consideration	Connecticut DOT	Office of Environmental Planning	Not determined
Florida	4 welcome centers, 1 plaza center, 1 mobile test trailer	Florida DOT	No additional partners	ZOOM Information Systems
Illinois	7 Tollway Oases	Illinois State Tollway Highway Authority	No additional partners	Hughes Net and AT&T via contract with Wilton Partners
Iowa	39 rest areas	Iowa DOT	Several, including Dept. Public Safety and Dept. Tourism	ZOOM Information Systems
Kansas	4 rest areas	Kansas DOT	Kansas Highway Patrol, Kansas Dept. Commerce	Coach Connect
Michigan	1 rest areas, 2 welcome centers, 1 conference center, 6 parks and harbors	Michigan DOT	Dept. Nat. Res., Travel Mich. Dept. Info. Tech., Mich. Eco. Dev. Corp.	AT&T
Minnesota	50 planned rest areas	Minnesota DOT	No additional partners	ZOOM Information Systems
Nevada	1 rest area, 3 welcome centers	Nevada DOT	Las Vegas Visitors Convention Auth.	Scientel
New Mexico	2 rest areas/visitor centers	New Mexico DOT	NM Tourism Dept	ENMR-Plateau Telecommunication (Glenrio site only)
No. Carolina	Not determined	North Carolina DOT	Not determined	Not determined
North Dakota	14 rest areas/visitor centers	North Dakota DOT	No additional partners	DOT installed WiFi with existing resources
Oregon	6 rest areas and 4 state parks	Oregon Travel Information Council	Oregon DOT, Dept. state parks	Coach Connect
Texas	86 rest areas and 12 welcome centers	Texas DOT	Texas Historical Comm., Parks and Wildlife Dept, and Arts Comm.	ZOOM Information Systems beginning May 1, 2008
Vermont	8 welcome centers and information centers	Vermont Agency of Transportation	Dept. of Buildings and General Services, Agency of Commerce and Community Dev.	Summit Technologies
Washington	28 rest areas	Washington DOT	Parsons Transportation Group	Coach Connect

Business Models

The business model analysis focused on the costs and revenue associated with providing WiFi service at rest stops, as well as the allocation of these costs and revenue between the public sector partner and the private sector service provider. Purchase of equipment, installation, and operation are categorized as costs. Revenue can be obtained from user fees and/or advertising. Unlike a traditional business model in the private sector, where revenue should exceed costs, a public private collaboration includes a benefit to the general public that is not necessarily captured in the revenue stream. The expected benefit to the general public might be viewed as the amount that a public sector agency is willing to pay for the service.

A variety of business models for providing WiFi at rest stops were discovered during the expert interviews. One perspective was that the private sector should operate WiFi as a commercial business, absorbing all of the costs for installation and operation, while gaining revenue from user fees and/or selling advertising. Under this scenario, the benefit to the traveling public is provided at minimal cost to the state. Costs to the state include providing power at the rest stops and staff resources to manage the contract and for oversight at the rest stops. There is also an opportunity cost of providing right-of-way access that might be otherwise utilized. Under an alternative perspective, the public agency pays the WiFi service provider for all installation and operation costs. The WiFi service provider does not need to gain revenue from user fees or advertising, although user fees and advertising revenue may be included or allowed. Both of these business models were represented among the states that were interviewed. In addition, a number of states implemented Wifi at rest stops with the private and public partners sharing responsibility for costs, and in some cases also sharing revenue. Between the initial interviews conducted in the summer of 2007 and the update interviews in the spring of 2008, a shift was observed towards public agencies paying for the service.

Goals and Objectives

For many states the primary goal of implementing WiFi at rest stops was to provide real time information to travelers about road and weather conditions, as well as emergency situations.

Often there was an additional goal of helping travelers locate restaurants, hotels, and regional tourism information. State representatives also noted other goals related to providing truckers with online services, as well as expanded communication infrastructure for emergency responders, law enforcement, and state employees. Two states with kiosks indicated that access to the Internet at the rest stops was a very low cost method to reach a large audience with travel-related information because the kiosks are available to all visitors. One large state with long travel distances indicated that the primary goal of providing WiFi at the rest stops was to encourage travelers to stop and take a break to reduce fatigue related incidents on the road.

States noted a variety of potential approaches to gauge the success of the WiFi program, although many indicated actual that their application was difficult. These included:

- Feedback via a toll-free number and letters;
- Feedback when the system is not working;
- Low system operating costs;
- Ability of the vendor to sell advertising;
- Visual inspections of number of users at the rest stops (kiosks only);
- Number of users clicking (moving) to the exit guide;
- Number of users accessing the system;
- Increasing number of users over time;
- Usage without negative impacts on the rest areas, such as parking problems, vandalism or additional maintenance costs;
- No cost to the state and sustainable for the business partner;
- Number of users accessing the unpaid system (traveler information and driver education); and
- WiFi is available at all rest stops in the state.

The types of benefits to the traveling public that the states hoped to provide via Wifi at rest stops included:

- Improved safety;
- Access to location specific tourist information;
- Ability for travelers to make hotel/motel reservations via the kiosks;
- Ability to take care of business while traveling;
- Information to help travelers make good decisions about the road ahead;
- Information about the final destination; and
- A good reason to take a break from driving.

Very little analysis had been completed regarding the expected benefits in relation to the costs. A couple of states noted that the costs were low, and one state indicated that WiFi is just another safety feature such as additional lighting or pavement markings.

Installation and Operation Costs

States have taken a variety of approaches to installation and operation costs, as shown in Table 2. Business models with the WiFi service provider absorbing responsibility for all installation and operation costs were not successful. For example, in Florida, Oregon, Kansas and Texas, the initial business model was to provide the WiFi service at no cost to the state. In Florida and Texas, there has been a shift towards public sector payment for the WiFi service. In Oregon and Kansas, the contracts were under negotiation as of April 2008.

In Michigan, WiFi service is provided by a major telecommunications company at no cost to the state. Information was not available about service provider costs or motivations.

In Illinois, the WiFi is provided at no cost to the state through a development company that provides a package of services. Neither the state nor the users pay for the WiFi. Instead the WiFi is considered an amenity that brings people to the service plazas where they will spend money on other services, such as gas and food. This business model is only appropriate for service plaza facilities and does not apply to traditional roadside rest stops, including California's SRRAs.

Alternatively, Iowa determined that the WiFi service provided a significant benefit to the traveling public and pays for all installation and operation costs. Vermont also pays the WiFi provider for installation and operation costs.

An example of the shared cost model is in Nevada, where the state pays for the equipment and some of the operating costs, but the WiFi service provider is also expected to obtain revenue from user fees or advertising.

Table 2: Installation and Operation Costs (as of April 2008)

State	Equipment & Installation Costs	Responsibility for Equipment & Installation Costs	Periodic Costs	Responsibility for Periodic Costs
California	Undetermined	Shared between Caltrans and Coach Connect	Undetermined	Coach Connect
Connecticut	Undetermined	Undetermined	Undetermined	Undetermined
Florida	\$160,000 for initial and periodic costs for one year, for four welcome centers and one rest area	Florida DOT pays Zoom Information Systems	Included in the \$160,000 cost for one year of service	Florida DOT pays ZOOM Information Systems
Illinois	Undetermined	Wilton Partners	\$200 per site/month with Hughes Net: \$140 to \$180 per site/month with AT&T	Wilton Partners
Iowa	\$72,000 for 39 rest areas and welcome centers: Iowa DOT owns all wireless equipment	Iowa DOT pays for software development, web design, technical support, kiosks, track balls, monitors, computers, content and to periodically update equipment	\$3,000/month for 39 rest areas (\$76.92/site/month)	Iowa DOT pays ZOOM Information Systems
Kansas	Undetermined	Coach Connect (under negotiation)	\$150 average per location (costs vary per location)	Coach Connect (under negotiation)
Michigan	Undetermined	AT&T	Undetermined	AT&T
Minnesota	Under Negotiation	Minnesota DOT expects ZOOM to provide equipment, installation, and web design	Under Negotiation	Minnesota DOT expects ZOOM to provide WiFi service, system maintenance and support services
Nevada	\$52,000 system installation for 3 welcome centers and 1 rest area	Nevada Logo Sign Program	\$9600 to Scientel for maintenance (\$200 per site/month)	Nevada Logo Sign Program
New Mexico	Undetermined	ENMR Telecommunications	Undetermined	ENMR Telecommunications
North Carolina	Undetermined	North Carolina DOT plans for vendor to pay for all costs	Undetermined	North Carolina DOT plans for vendor to pay for all costs
North Dakota	Undetermined	North Dakota DOT used "off the shelf" equipment and resources	Undetermined	North Dakota DOT used existing DSL and fixed wireless broadband

Oregon	\$25,000 for first 7 sites	Oregon TIC paid for wireless equipment, installation and website portal	Undetermined	Undetermined
Texas	\$70, 000 to develop website portal: Other costs undetermined	Texas DOT purchased the WiFi equipment from Coach Connect after the pilot	\$29,000/month for 86 rest areas and 12 welcome centers (\$259 per site/month)	Texas DOT pays ZOOM Information systems
Vermont	\$10,000 average per location: \$15,000 for two locations when opposing traffic directions can be linked	Vermont DOT pays Summit Technologies	Undetermined	Vermont DOT pays Summit Technologies
Washington	Undetermined	Parsons Transportation Group pays Coach Connect: No cost to the state	Undetermined	Parsons Transportation Group pays Coach Connect: No cost to the state

User Fees and Advertising Revenue

States have taken a variety of approaches regarding revenue from WiFi at rest stops. Some states prefer to pay for the WiFi service and are not concerned about receiving revenue. Other states do not want to pay for the systems, but allow the WiFi provider to obtain revenue through user fees and advertising. Federal regulations appear to preclude states or vendors from charging fees for goods or services for anything other than telephones or vending machines at rest stops. See 32 CFR 752.5(g) and 23 CFR 752.89(c)(5) for restrictions on charging the public at state rest stops. Some states indicated, however, that they received permission to charge user fees for access to WiFi at rest stops as long as access to the initial web page and traveler information remained free.

Table 3 provides a summary of user fees and advertising revenue among the states that were interviewed. The trend seems to be moving away from user fees. However, some WiFi service providers are still experimenting with user fees and may find a structure/payment plan that is viable. In some cases WiFi is provided free during the pilot phase, but user fees are anticipated if the pilot is successful. Most states that charge user fees allow the users to access the Internet free for a short time before charging, or access to travel information sites for free. Allocation of user fees varies, but many states use a shared revenue model, especially if the state is paying installation and operation costs.

While many states allow for advertising, not all of the WiFi providers have exercised this option. Some WiFi providers are selling advertising. Like user fees, advertising revenue is more likely to be shared when the state pays for the WiFi. It is possible that Federal rules may also restrict location and content of advertising at rest stops. See 23 CFR 752.7 regarding rules for advertising at state rest stops.

None of the WiFi service providers contacted covered all costs with user fees and/or advertising revenue at the time of the interviews.

Table 3: Revenue Sources and Allocation (as of April 2008)

	Charging User Fee	User Fee Revenue Allocation	Is Advertising Allowed	Selling Advertisements	Advertising Revenue Allocation
California	Free	No revenue	Yes	Currently None	Coach Connect
Connecticut	Not Determined	Not Determined	Not Determined	Not Determined	Not Determined
Florida	No user fee during first year pilot: After pilot plan to have first 15 minutes free: Paid subscription up to 90 additional minutes: User fee for additional time undetermined	After pilot plan will have revenue sharing: 50% to Zoom and 50% to FDOT	Not during the pilot: Advertising will be allowed after the pilot	Not during the pilot: Plan to in the future	Revenue split: 60% to Zoom and 40% to FDOT
Illinois	Free	No revenue	Through a 3rd party advertising company	Yes	Unknown
Iowa	Unlimited free time initially: Will charge Spring 2008 with two fee options: (1) free first 30 minutes, additional hour for \$2.99, or (2) day pass: Boingo subscribers use system for free (Boingo subscription is \$25/month)	Zoom gets user fee: When a Boingo subscriber logs on ZOOM gets 50 cents: If a person subscribes to Boingo from a rest area Zoom gets \$50.00	Yes	Yes	ZOOM Information Systems

Kansas	WiFi free during pilot project: Plan to have user rates after pilot (under negotiation)	No revenue during pilot. Not Determined for implementation	Yes	No	Coach Connect: Revenue sharing after certain threshold is met
Michigan	Splash page and safety websites free: Existing AT&T customers can pay \$1.99/month for unlimited hotspot access: Non-AT&T customers pay \$7.95/24-hrs or monthly subscription of \$19.95	SBC/AT&T	Yes	No	Unknown
Minnesota	Under Negotiation	ZOOM Information Systems	Yes	Not until negotiation complete	Under Negotiation
Nevada	Initial 30 minutes free: Rate structure undetermined.	Scientel Wireless	Yes	Not currently: ZOOM plans to sell advertising	Revenue sharing planned between companies and DOT: Undetermined split
New Mexico	Initial 15-20 minutes free: Rate structure undetermined	ENMR-Plateau Telecommunications	Yes	Undetermined	Undetermined
North Carolina	Undetermined	Plans for revenue sharing after threshold met	Against the law in NC to advertise	No	No revenue
North Dakota	Free	N/A	No	No	No revenue
Oregon	Several free web-pages including Oregon traveler information: Other sites \$1.99/20 min., \$3.99/24hrs, \$7.99/week, \$31.99/month	Initially 50% to Coach Connect and 50% to TIC: Currently TIC gets 100%	Yes	TIC is selling advertising: Goal to expand system to sell advertising more effectively	TIC: Cannot charge until system is expanded
Texas	Free	No revenue	Yes	Yes	ZOOM Information Systems
Vermont	Free access to state portal: Other sites \$4.95/hr, \$9.95/day, \$19.95/week, \$25/month, or \$250/year	Revenue split: 40% to the state and 60% to Summit Technologies	Advertising currently not allowed: This may change	No	No revenue
Washington	WSDOT and traveler information sites free: Other sites charge \$2.95/15min., \$6.95/day, \$29.95/month	Revenue split 80% Coach Connect and 20% WSDOT	Yes	Yes	Revenue split 80% Coach Connect and 20% WSDOT

III. California Drivers' Opinions of WiFi at Safety Roadside Rest Areas

Eight focus groups were conducted throughout California during the winter of 2007 to 2008. The purpose of the focus groups was to understand typical California highway drivers' opinions about WiFi access at SRRAs. The focus groups were conducted in Los Angeles, Ontario, Fresno, Walnut Creek, and Redding. To gain perspective from a variety of highway and likely SRRA users, three population groups were identified to participate in the focus groups. These populations included business travelers, recreation travelers, and truckers. See Appendix B for focus group summaries. A total of 78 individuals participated in the focus groups, in the following categories:

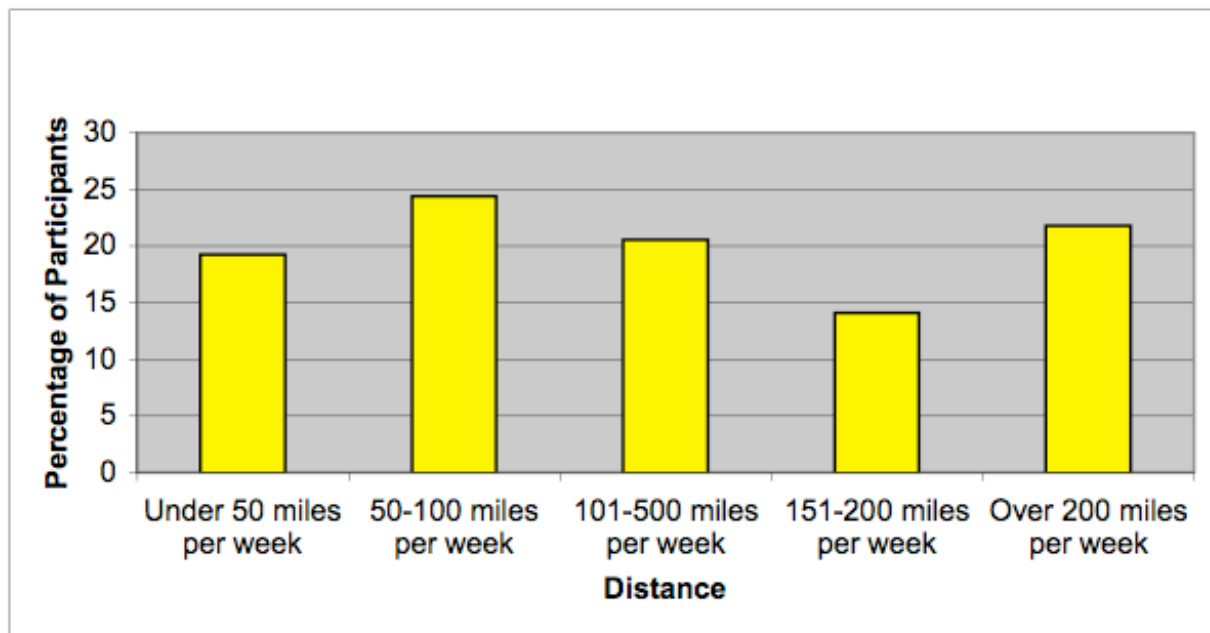
- Three focus groups with business travelers (Walnut Creek, Redding, Fresno);
- Three focus groups with recreation travelers (Walnut Creek, Redding, Los Angeles); and
- Two focus groups with truckers (Ontario).

Pre-Focus Group Questionnaire Results

Before each of the eight focus groups a questionnaire was administered to the participants to provide baseline of information about the participants. Although these data are not statistically significant for analyzing California highway drivers or SRRA usage, they are useful in understanding key attributes of focus group participants. See Appendix C for the questionnaire.

Figure 1 shows the average weekly mileage of the focus group participants. Among those participants who drove over 200 miles per week, the average was 770 miles. The Ontario focus groups, which represented truck drivers, reported 1,000 average miles driven per week.

Figure 1: Typical Mileage on California Highways Reported by Focus Group Participants



The focus group participants reported a wide range of academic achievement, ranging from grade school through Ph.D. or higher. The majority of the participants attended college:

- One completed grade school;
- Six reported some high school;
- Twelve graduated high school;
- Seven reported Associate's degrees;
- Twenty-nine attended some college;
- Fifteen graduated with a Bachelor's degree;
- Two attended some graduate school;
- Three finished graduate school with Master's Degrees;
- Two accomplished Ph.D. or higher; and
- One reported other training.

The occupations of the focus group participants encompassed a wide range. Professional and skilled workers were well represented:

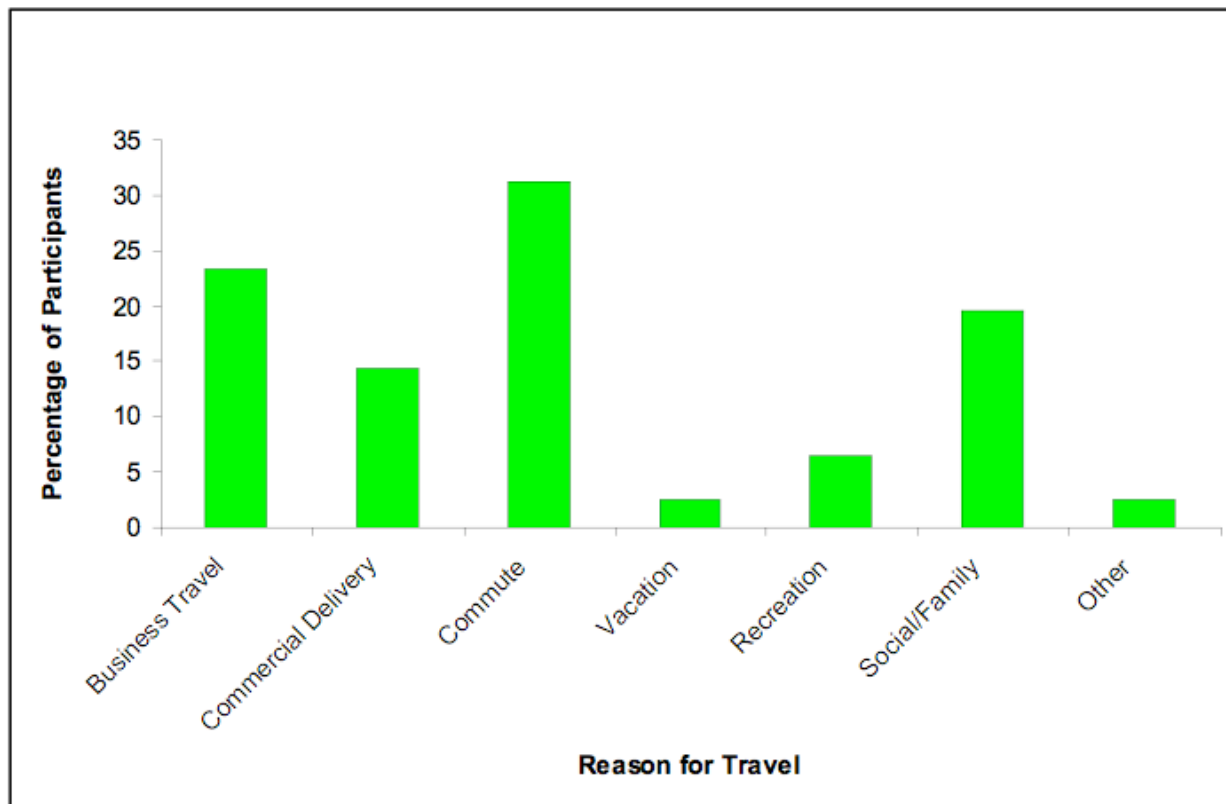
- Sixteen were managers or administrators;
- Three worked in service or repair;
- Eleven were clerks or administrative support;
- Five were in sales;
- Twelve were professionals or technicians;
- Four were in production, construction or trade;
- Ten were truck drivers; and
- Seventeen selected other.

Their 2006 pre-tax household income was mixed as well, with a broad representation of income levels.

- Five reported earning under \$10,000;
- Four stated \$10,000 to \$19,900;
- Nineteen indicated \$20,000 to \$49,900;
- Fifteen noted \$50,000 to \$79,900;
- Twenty-four reported \$80,000 to \$109,900;
- Ten stated more than \$110,000; and
- One declined to respond.

The focus group participants were asked to rank order their reasons for traveling on California highways, from most frequent to least frequent. Figure 2 illustrates the most frequent reasons for traveling on California highways that were reported by the 78 focus group participants. Notice commuters, business, and commercial delivery travelers are highly represented at the focus groups.

Figure 2: Most Frequent Reasons for Traveling California Highways



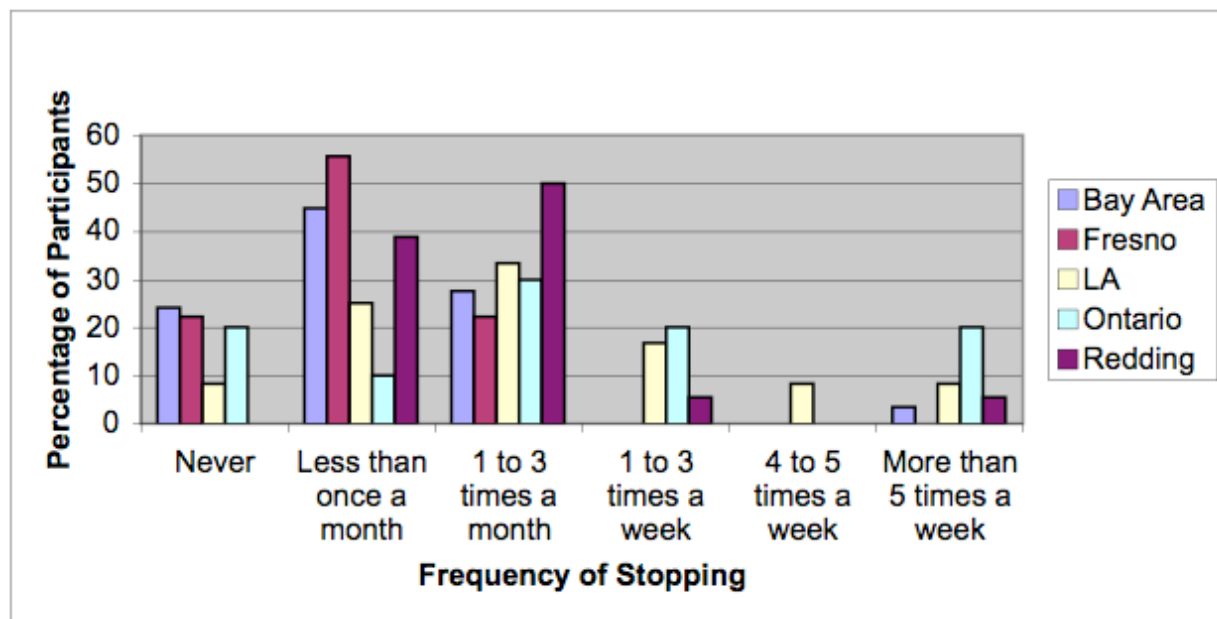
The focus group participants were asked to list the highways they typically drove on most frequently in order from highest mileage to lowest mileage. In Table 4 the most commonly used highways are listed first.

Table 4: Most Frequently Used Highways

Region	Highways
Redding	I-5, SR-44
Bay Area (Walnut Creek)	I-680, SR-4, I-880, I-80, SR-24, SR-242, I-580
Fresno	SR-99, SR-168, SR-41
Los Angeles	I-405, I-5, US Route 101, I-110, SR-118
Ontario (Truckers)	SR-99, I-10, I-15, I-5

The participants were also asked how often they had stopped at an SRRAs within the last year. The Ontario participants, representing the truck drivers, use the SRRAs the most often. Many of the participants use SRRAs less than once a month, although a significant number use the SRRAs one to three times each month.

Figure 3: Frequency of Stopping at Safety Roadside Rest Areas (Prior Year)



Participants were asked about their typical reasons for stopping at SRRAs. Among all types of travelers, use of restrooms and need to rest were the dominant reason for stopping at SRRAs. This data was compared to the participant's reasons for travel (Figure 4) and the region of the focus group (Figure 5).

Figure 4: Reason for Safety Roadside Rest Area Use by Traveler Type

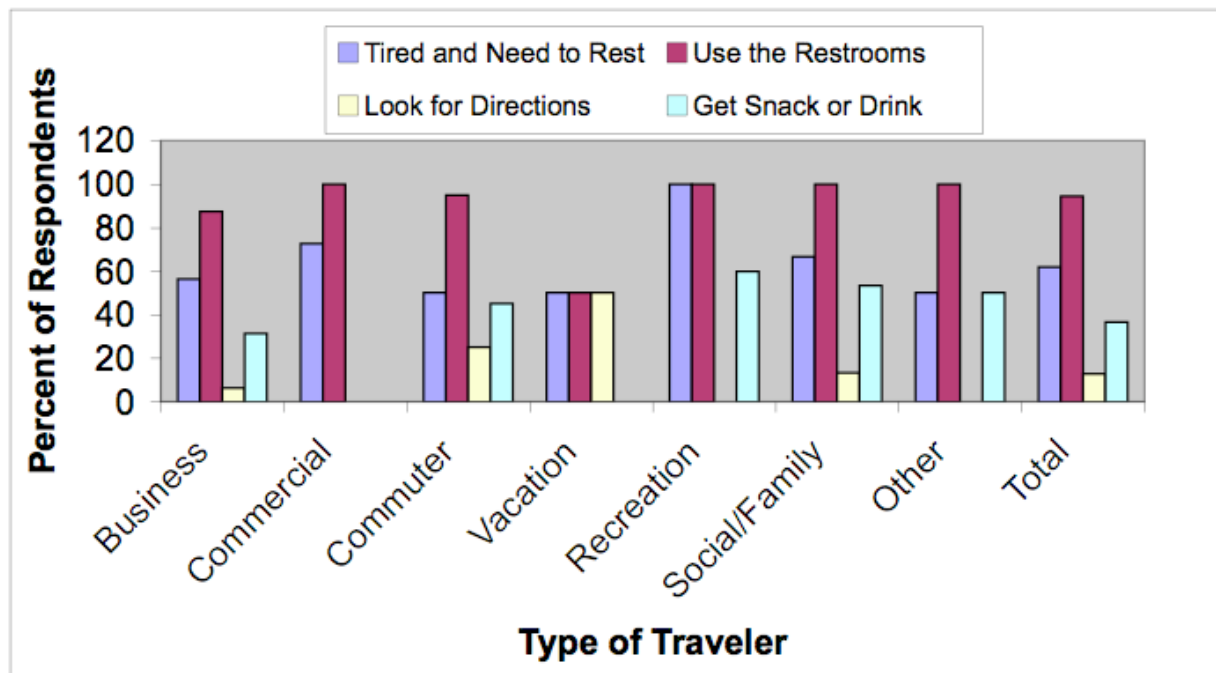
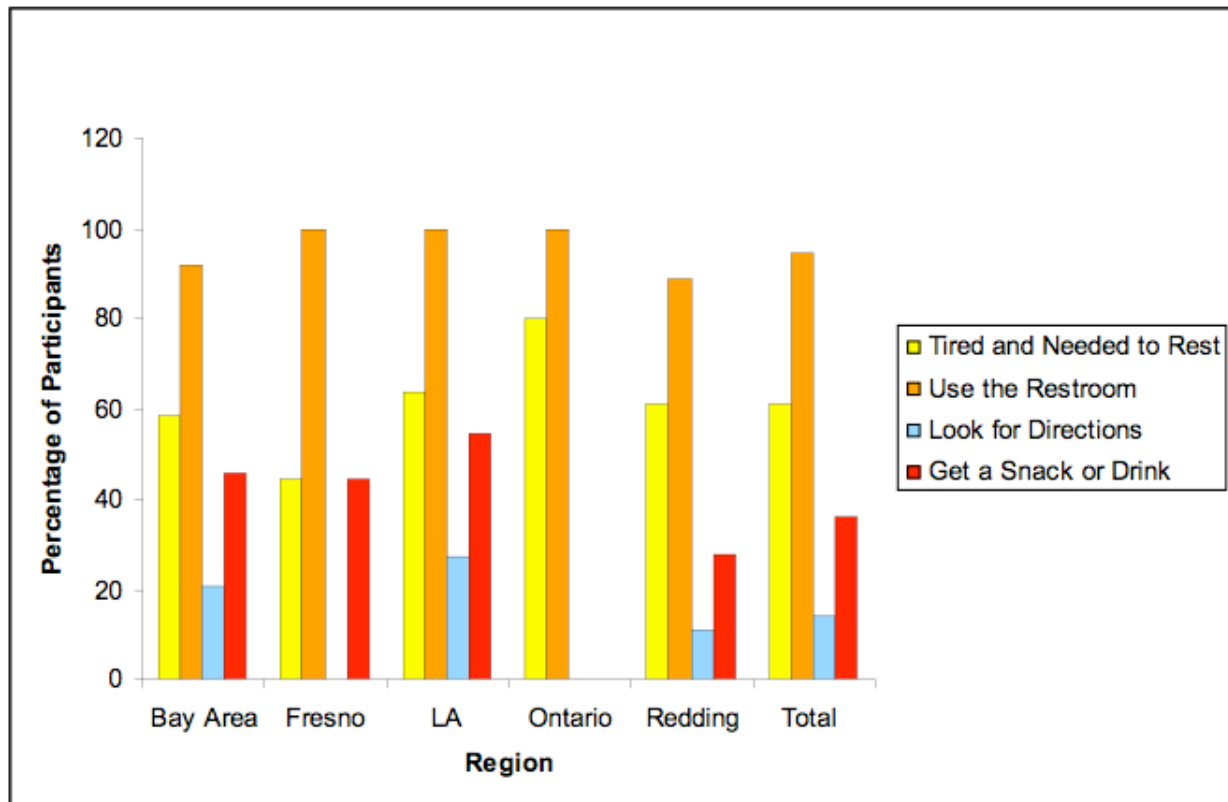


Figure 5: Reason for Safety Roadside Rest Area Use by Location of Focus Group



Finally, the participants were asked about what types of devices for Internet connection that they carried with them while driving California highways. Fifty-nine percent of the participants carried laptops, 46 percent carried web enabled cell phones, 30 percent did not carry any devices that connect to the Internet while traveling, and a small percent were found to carry personal digital assistants (PDAs). Figure 6 illustrates the type of devices with Internet capability that participants carried while traveling by location of focus group. Figure 7 illustrates the type of devices with Internet capability by traveler type.

Figure 6: Possession of Device with Internet Accessibility by Region

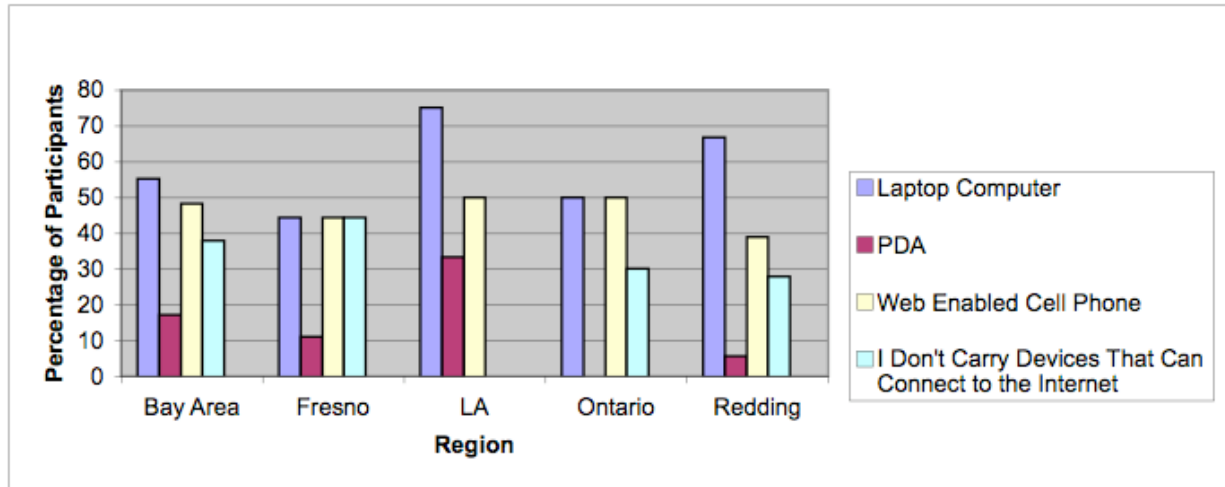
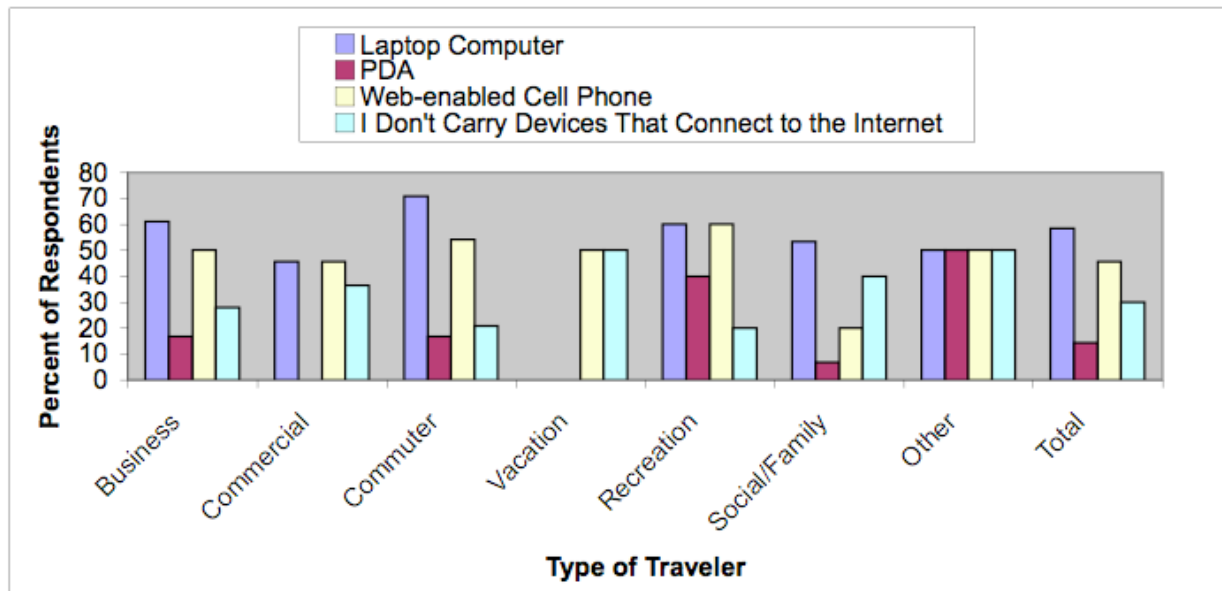


Figure 7: Possession of Device with Internet Accessibility by Traveler Type



Focus Group Summaries

Following are summaries of the eight focus groups represented by traveler type: business traveler, recreation traveler, and trucker. See Appendix B for summary from each focus group. Note that preferences or dislikes are not presented in rank order.

Recreational Travelers Focus Groups

Focus groups were conducted with recreation travelers in Los Angeles, Redding, and Walnut Creek. A total of 38 recreation travelers participated in the focus groups. All participants were between the ages of 25 and 55 years old. Eighteen of the participants were male and 20 were female. Thirty-four participants used the SRRAs and four did not.

Participants noted the following reasons for using the SRRAs:

- Use restrooms;
- Rest/stretch;
- Change diapers;
- Smoke;
- Get snacks;
- Change drivers;
- Get directions/maps;
- Obtain recreation information;
- Walk pet;
- Use cell phone;
- Enjoy park-like setting;
- Well lit (People stated they only stopped at well lit rest stops); and
- Conveniently spaced along freeway.

Twenty of the recreational travelers reported staying at SRRAs from ten to 20 minutes, while six reported five to ten minutes and six reported 20 to 30 minutes. Just two recreation travelers reported staying at SRRAs for 30 minutes or longer.

Among those participants who did not use the SRRAs, one noted that safety was the primary concern, two stated that they preferred to stop at gas stations and/or restaurants, and one noted that they were anxious to get to their destination.

The things that the recreation travelers liked most about the SRRAs were:

- Parking;
- Clean restrooms;
- Exercise;
- Easy freeway access (in and out);
- Pet area;
- Picnic tables and BBQ area;
- Snacks;
- Availability of brochures and maps;
- Park-like setting;
- Lights;
- Food;
- Lawns to rest on;
- Availability of ice cream;
- Updated facilities; and
- Lots of people around.

The things that the recreation travelers liked least about SRRAs were:

- Drinking fountains (dirty and tastes bad);
- Food choices (wanted healthier foods);
- Poor lighting;
- Dirty restrooms (out of paper and soap);
- Lack of security;
- No play structure for children;
- Rest stops are often closed; and
- Truck and car parking not well marked.

Things that the recreation travelers would like to see at SRRAs (if not already noted above) included:

- Cell phone reception;
- Changing tables for children in rest rooms;
- Newspaper vending machines;
- Food vending machines (at those that don't already have);
- Water and air stations for cars and trucks;
- Map vending machines;
- Showers;
- Coupons for local attractions, hotels, and restaurants;
- Dumping station for recreation vehicles (RVs);
- Internet connection (one participant noted that this should be free);
- Cell phone and lap top charging facilities; and
- Large common area with inside access to restrooms.

The recreation focus group participants were asked about what devices they carried that could connect to the Internet. Some carried more than one of these devices. Among the recreation travelers, 19 traveled with a laptop and many noted that their laptops had air cards. Five traveled with PDAs and 32 traveled with cell phones.

Some participants did not carry devices that connected to the Internet because they did not own any. However, a number of participants noted that although they do own such devices, they do not carry these devices while on vacation because they want to get away from business and relax.

The focus group participants were also asked if they would use WiFi service at SRRAs if it were available. In Walnut Creek, seven of the 15 participants said they would use WiFi access if it were available. However, many changed their minds when the issue of security was discussed, saying they would feel like targets for thieves if they opened their expensive laptops at the SRRAs. This group noted that computers are available at hotels and restaurants so they could access the Internet without carrying their laptop. Some felt that they were more likely to access WiFi at these other locations. This group felt that if kiosks were available there would need to be a time limit and they thought the kiosks would be vandalized.

In Redding the majority of the participants indicated they would use WiFi at SRRAs if it was available, but they preferred to use a kiosk for this service. However, they did worry about lines at kiosks. In Los Angeles, all participants indicated they would use the service, but some preferred kiosks. Both Redding and Los Angeles participants indicated that they would use the service frequently if it were available.

Reasons the participants thought they might access WiFi at the SRRAs included:

- Check email;
- Get directions;
- Check road conditions;
- Check weather conditions;
- Make reservations;
- Check entertainment sources;
- Check business details; and
- Check recreation locations.

Most of the recreation focus group participants thought they would access the WiFi for five to 15 minutes, but a few indicated they might access the WiFi for up to an hour. One participant indicated that she would stay for as long as an hour to let her kids play games on the Internet.

The focus group participants were asked if they would be willing to pay a minimal charge, such as \$2.00 for 30 minutes after an initial half hour for free. In Redding and Walnut Creek the participants felt this would be reasonable (note that many did not expect to use the service for more than 30 minutes). However, in Los Angeles many of the participants felt the service should be free, such as a public library. Others wondered why they would pay for service when they can find free access elsewhere and some noted that they can use their cellular signal to access the Internet. Some thought that if Caltrans provided the WiFi signal they would have to configure their computer differently and this would not be worth the trouble. Another participant felt that Caltrans should get a corporate sponsor to pay for the cost of the WiFi service at SRRAs.

The vast majority of the participants who carried devices that could access the Internet (and many that did not carry the devices, but used friends' equipment) accessed the Internet at other public locations, such as airports, hotels, and cafes. They noted similar reasons for accessing the Internet at these locations as for accessing the Internet from an SRRAs.

For payment options, the Walnut Creek group was comfortable with using their credit cards on a pay as you go basis (rather than weekly or monthly subscriptions), while the Los Angeles group would not use their credit cards because of concerns about identity theft. The Los Angeles group also preferred the daily pay as you go option. In Redding the group was split between Pay Pal and credit cards as well as if they preferred daily or monthly options.

Business Travelers Focus Groups

Focus groups were conducted with business travelers in Fresno, Redding, and Walnut Creek. A total of 29 business travelers participated in the focus groups. All participants were between the ages of 25 and 55 years old. Twenty of the participants were male and nine were female.

Twenty-seven participants used the SRRAs and two did not.

The business travelers noted the following reasons for using the SRRAs:

- Exercise;
- Restrooms;
- Rest/stretch;
- Get water;
- Smoke;
- Sleep/nap;
- Use laptop;
- Get snacks;
- Change drivers;
- Read map and get directions;
- Make phone calls;
- Check email;
- Let pets out;
- Communicate with employees;
- Wait for rain to stop; and
- Wash hands.

Thirteen of the business travelers stayed at SRRAs from ten to 20 minutes. Eleven stayed at SRRAs five to ten minutes. None of the business travelers indicated staying at SRRAs 20 to 30 minutes and just two noted staying longer than 30 minutes.

One business focus group participant indicated a preference for stopping at restaurants instead of SRRAs. Many of the business participants who did stop at SRRAs also noted that they stop at other locations such as gas stations and restaurants. Safety was noted as a reason for not stopping at SRRAs.

The things that the business travelers liked most about the SRRAs were:

- Lighting (when the rest stop is lit up);
- Ease of access (on and off freeway);
- Parking;
- Location (spaced at convenient intervals);
- Snacks and water;
- Park-like setting;
- Parking for trucks and cars;
- Usually shady and grassy;
- Cleanliness;
- Pet areas;
- Restrooms;

- Maps; and
- Picnic Areas.

The things that the business travelers liked least about SRRAs were:

- Lack of security;
- Dirty, shabby, smelly restrooms;
- Too dark (not well lit);
- Entrance and exit ramps are too short;
- No staff;
- Lack of working drinking fountains;
- Too cold in the winter; and
- No food.

Things that the business travelers would like to see at SRRAs (if not already noted above) included:

- Security person;
- Play yards for children;
- Restaurants;
- Improved lighting;
- Retail facilities, such as AM & PM Stores;
- Gas;
- Better entrance and exit lanes;
- More people (feel more comfortable with more people);
- Information booths;
- Updated restrooms;
- Better signage on highway in advance of rest stops;
- Vending machines;
- Fenced area for pets;
- WiFi access; and
- Emergency call box linked directly to emergency services.

For the business travelers who did not use SRRAs, facilities that would encourage them to visit SRRA included retail stores, restaurants, live service people, showers, playground, places to sleep, and computer or WiFi services. Additional lighting and improved security were also noted.

The business focus group participants were asked about what devices they carried that could connect to the Internet. Some carried more than one of these devices. Among the business travelers fifteen traveled with a laptop and some noted that their laptops have air cards. Two

travel with PDAs and the majority travel with cell phones. Three of the participants did not own a cell phone or laptop.

Many of the business participants use their laptops or other devices every time they traveled and two were in constant contact with employees or salesmen. Others did not use their devices on all trips. In Redding all of the participants thought they would access the WiFi service at SRRAs if it was available and some thought that kiosks would be good for people without laptops, but some worried about lines.

The business focus group participants were asked if they would use WiFi service at SRRAs if it were available. In Redding, two said they would, one would if their air card was not working, and another said that their air card works all the time so they would have no need for WiFi.

In Fresno, there was a mixed reaction to WiFi at SRRAs. One participant would definitely use the service, while another was adamant that it was a bad idea and that the money should be used for renovations and other features that are more important. In between these extremes, the rest of the business participants in Fresno were somewhat interested in the service, but some thought it was not practical and would not be used by very many travelers. Kiosks were also mentioned as possible, but vandalism was noted as a possible problem.

Overall the business travelers did not think they would use the WiFi service very often. In Walnut Creek, the participants felt they would just use the service if there were an emergency and for no more than 30 minutes. In Redding, responses ranged from the participants noting one to three times per month or just a few times each year. Most believed they would use the Internet for five to ten minutes, but one participant indicated 20 minutes. One participant noted again, that they were satisfied with their air card and saw no reason to ever use the WiFi. Among the Fresno participants, there was very little interest in using the WiFi at SRRAs. However, these same people did contribute to the question regarding reasons for using the WiFi at SRRAs. One participant thought that the only people who would use the WiFi at SRRAs were people who did not have access at home.

The reasons the business travelers would access WiFi at the SRRAs included:

- Look up directions, such as mapping websites;
- Check email;
- Check road conditions;
- Find services, such as tow truck and garage for repairs;
- Check weather conditions; and
- Find traveler information, such as hotels, and restaurants.

The focus group participants were asked if they would be willing to pay a minimal charge, such as \$2.00 for 30 minutes after an initial half hour for free. All of the business travelers thought this rate structure was fine (note that most did not anticipate using the service for more than 30 minutes). One participant thought the rate was reasonable, but also noted that the service could easily be supported by advertising.

In Redding, four participants who carry laptops indicated that they had used WiFi at cafes, airports, and hotels, but had never used WiFi at park locations. They also stated that they would be comfortable paying via Pay Pal, but not credit card. In Fresno, five of the business travelers had accessed WiFi at other public locations, such as Starbucks, airports, and hotels. None used WiFi in park settings. The Fresno group was comfortable paying with a credit card.

In Walnut Creek, nine of the business travelers used WiFi at public locations, but most did not pay for the service. They noted that at hotels you often pay as much as \$10.00 to access WiFi.

None of the business travelers were interested in a subscription service. They all preferred to pay on a one-time basis each time they used the service.

Truckers Focus Groups

Recruiting truckers for the focus groups proved to be difficult because truckers spend most of their time on the road and could not be available at a specific location and time for a focus group. Recruitment was done through the Internet, satellite radio, and in-person at the truck stops. In addition, parking for the truckers was difficult, as most focus group facilities do not have parking lots that could accommodate large trucks. Both of the trucker focus groups were held in Ontario

at a hotel that was within a half mile of the largest truck stop in the United States. A total of ten truckers participated in the focus groups, nine men and one woman. Nine were long-distance truckers and one was a local trucker.

The truckers indicated they spend between 280 to 340 days per year on the road. They use SRRAs for the restrooms, to sleep, to make phone calls, to use the vending machines, for the picnic areas, and for smoking breaks.

The attributes the truckers liked most about SRRAs were:

- Easy access;
- Cleanliness;
- Room to park;
- Lighting;
- Place to walk/stretch legs;
- Place to rest and sleep;
- Pet areas; and
- Saves time (truck stops are difficult to access).

The attributes the truckers liked least about SRRAs were:

- Prostitutes and transients;
- Rest areas closed too often;
- Lack of parking;
- Lack of security;
- Sexual activity;
- Non-truckers using truck spaces;
- No parking for oversized rigs; and
- California Highway Patrol (CHP) surprise inspections.

The truckers stated that criminal activity at SRRAs in California is excessive and the SRRAs should be patrolled or Caltrans should provide security. When a SRRRA is closed due to criminal activity, the truckers do not have alternative places to park their rigs. Regular truck stops require 45 minutes to get into and out of, which is valuable wasted travel time. In addition, at regular truck stops the truckers must purchase \$12.00 in gas or merchandise for each two hours they spend at the location.

The services that truckers use at SRRAs include:

- Restrooms;
- Pay phones;
- Vending machines;
- Trash cans;
- State information booklets;
- Highway maps; and
- Picnic areas.

The services that truckers would like to have available at SRRAs include:

- Separate parking for trucks;
- Money change machine;
- Larger parking spaces and lots;
- Showers;
- Security;
- Open more often;
- More rest stops (every 40 to 50 miles);
- Play area for kids (some truckers bring grandchildren with them in the summer);
- Free truck route maps and road maps;
- Closed circuit television with weather and road conditions;
- Construction information (local road closures);
- Satellite TV Access (some truckers have televisions);
- Amber alerts (truckers are on the road a lot and could help find people);
- Direct line to law enforcement (truckers see crime and want to report it directly to law enforcement); and
- Power source (new idle laws prevent truckers from charging their equipment).

During one focus group, the truckers noted a ride along program in Washington State where law enforcement personnel ride with the truckers to see the highway activity from the truckers' perspective, including crime and people using laptops while driving.

When asked about their communication needs, the truckers said they need to keep in touch with dispatch, family, other truckers, 911, and customers. The truckers need to search for loads (work), and check the news and weather. They noted that if they don't have contact with the outside world when driving, it is very lonely. To keep in contact, truckers primarily use their cell phones. Seven truckers had laptops and five had PDAs. One just carried a cell phone. The truckers carry these devices with them all the time.

During one of the trucker focus groups, none of the participants indicated that they would use WiFi at SRRAs. One because he has an air card and the other four said they don't use SRRAs for this purpose. They use truck stops when they want to use their laptops and PDAs to find loads and they worried that WiFi access at the SRRAs would not be secure. They said they use free WiFi access at truck stops and there is an additional networking function at truck stops to help find loads. At the SRRAs they are not social; they lock their trucks and sleep.

At the other focus group, four stated they would use WiFi at SRRAs. The one who would not use the service indicated that he thought his son, who is also a trucker, would do so. None of the truck drivers liked the idea of a kiosk. Those (four participants) who said they would use WiFi at SRRAs, indicated that they would use the service once a day while on the road for one to two hours to search for loads (work). None of these truckers was willing to pay for the service; they said the service should be free or paid by a sponsor.

All of the truckers access WiFi at truck stops. WiFi at SRRAs was not a priority issue for the truckers.

IV. User Data Analysis

Data recording use of the WiFi system at the two pilot locations were collected beginning July 19, 2007, when the WiFi service was made available to the public. Data through April 2008 is included in this report. The data collected included the following information: 1) time of login; 2) duration of session; and multiple logins.

Summary of Data Analysis

Over the period from July 2007 through April 2008, there were 15,629 WiFi login events at both SRRAs. This final total is estimated due to a few known missing days of data in February, March and April. During this time, 70.3 percent (or 10,988 logins) were recorded at Tipton and 29.7 percent (or 4,461 logins) were recorded at Turlock. Overall, use of the service appears to have remained fairly level over the ten month period. The data also indicate that WiFi use declines a small amount over the weekend. WiFi use appears to be at its lowest at 5:00 am, then begins to rise steadily to its peak from 2:00pm to 5:00 pm, and declines thereafter.

The analysis of duration of use indicates that users are most likely to login for five to 20 minutes and more specifically:

- Median login time is 18 minutes (half logins are shorter, half are longer);
- 25 percent of logins lasted for 9 minutes or less;
- 75 percent for 41 minutes or less;
- 90 percent for 86 minutes or less; and
- 95 percent for two hours and 22 minutes or less.

Weekend use was of shorter duration.

Eleven percent (n=911) of the users logged on three or more times during the entire test period (ten months). The median duration of logins among users who only used the system once or twice is 15 minutes and the median duration among users who used the system three or more times is 26 minutes (almost twice as long).

Frequency of WiFi Use

From July 2007 to April 2008, there were 15,629 WiFi login events at the both SRRAs. This final total is estimated due to a few known missing days of data in February, March, and April. During this time, 70.3 percent (or 10,988 logins) were recorded at Tipton and 29.7 percent (or 4,641 logins) were recorded at Turlock. This distribution is depicted in Figure 8.

Figure 8: Distribution of Login Events Between Tipton and Turlock

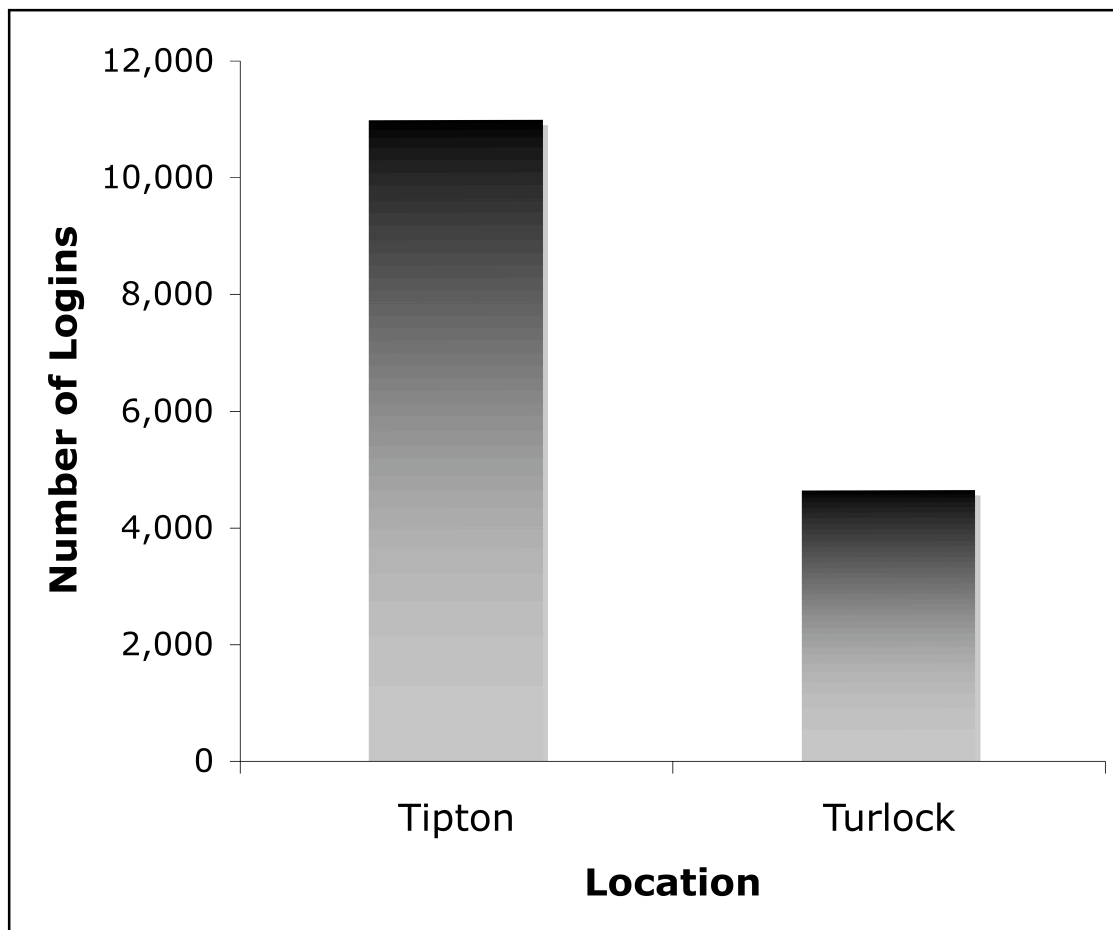


Table 5 and Figure 9 present the monthly distribution of average daily logins at both SRRAs from July 2007 to April 2008. The monthly distribution of logins is shown by number of logins in Table 6 and Figure 10. The WiFi service at Tipton is used more than twice as much as Turlock and there is almost a doubling of use from the first month of July to the second month of August. Although use of the services appears to have leveled off over time, the highest WiFi use was recorded in March of 2008.

Table 5: Monthly Distribution of Average Daily Logins at Safety Roadside Rest Areas

Year - Month	Tipton	Turlock	Overall
2007-07	16.8	11.0	27.8
2007-08	37.6	14.4	52.1
2007-09	33.8	9.9	43.8
2007-10	34.0	13.5	47.5
2007-11	36.6	16.0	52.7
2007-12	34.0	17.9	51.9
2008-01	40.1	14.1	54.2
2008-02	39.2	15.2	54.4
2008-03	44.4	24.3	68.7
2008-04	47.0	16.8	63.8
Overall w/o July			54.3

Figure 9: Monthly Distribution of Average Daily Logins at Both Safety Roadside Rest Areas

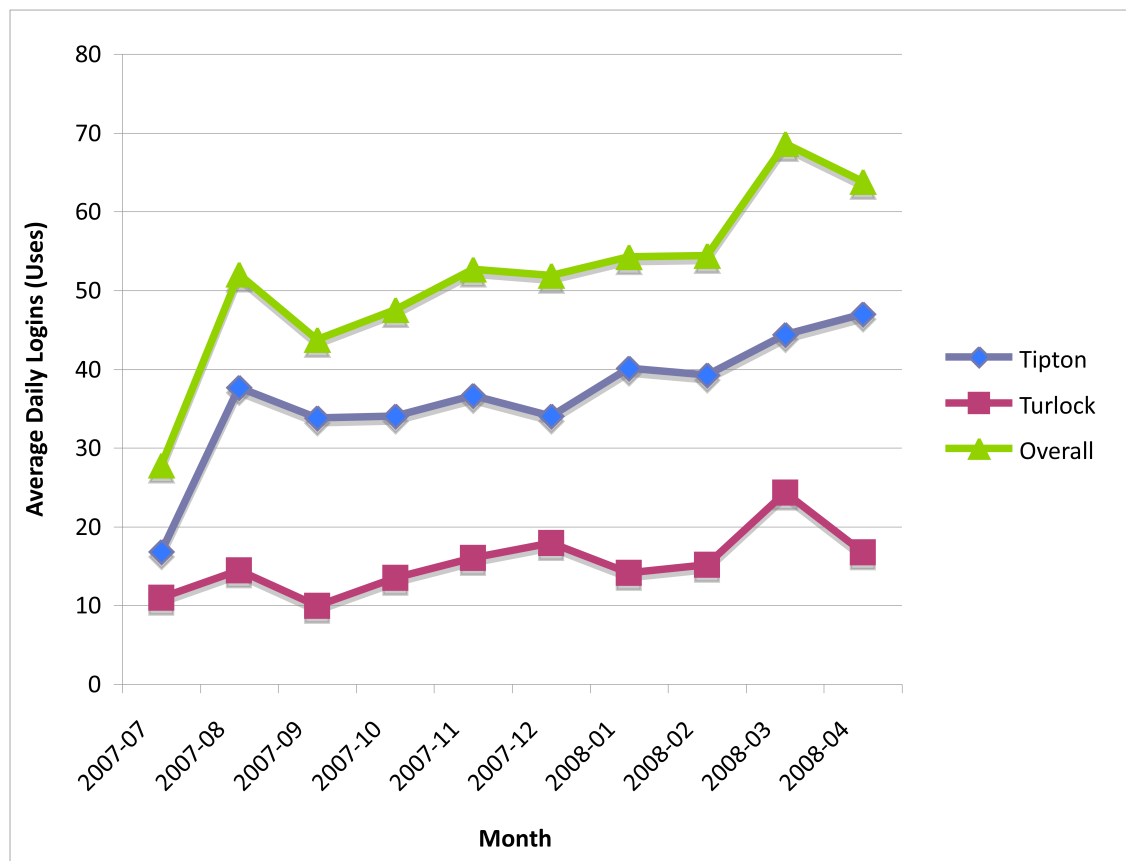
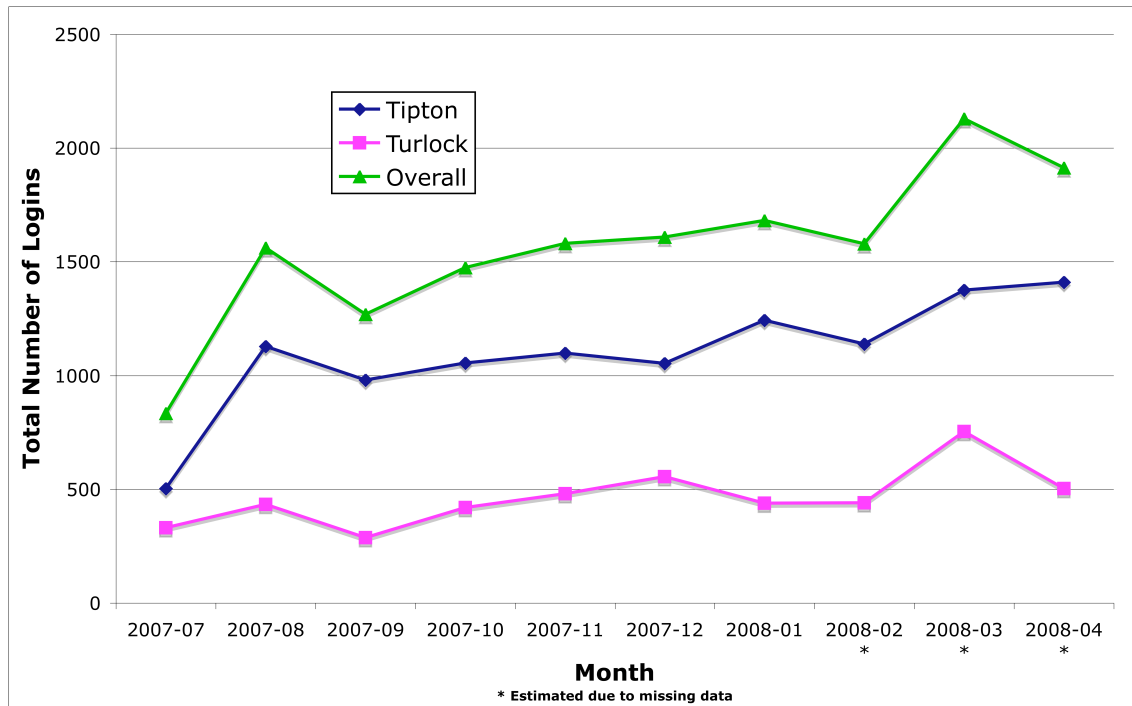


Table 6: Monthly Distribution of Logins by Safety Roadside Rest Area

Year - Month	Tipton	Turlock	Overall
2007-07	504	330	834
2007-08	1129	433	1562
2007-09	981	288	1269
2007-10	1055	419	1474
2007-11	1099	481	1580
2007-12	1054	555	1609
2008-01	1243	438	1681
2008-02 *	1138	441	1579
2008-03 *	1375	754	2129
2008-04 *	1410	503	1913
Total	10988	4641	15629
* Estimated due to known missing data			

Figure 10: Monthly Distribution of Logins by Safety Roadside Rest Area

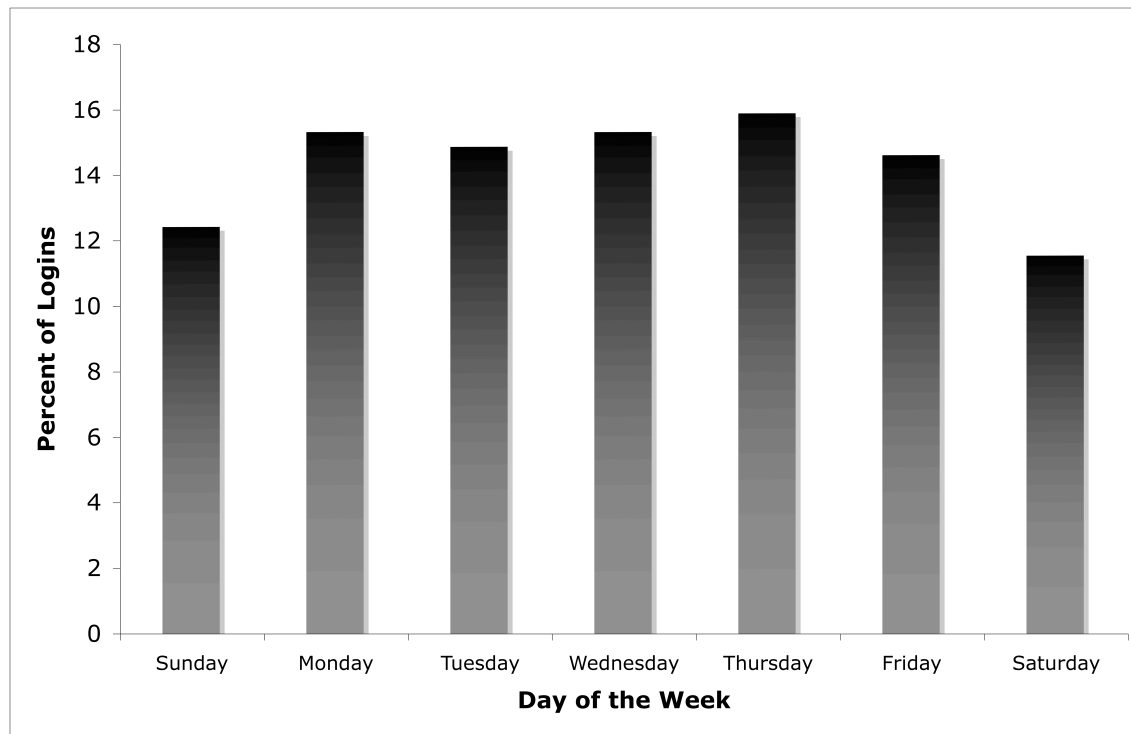


Total WiFi logins by day of the week over the July 2007 through April 2008 period are summarized in Table 7 and Figure 11 below. It appears that WiFi use declines somewhat over the weekends.

Table 7: Weekly Distribution of Logins at both Safety Roadside Rest Areas

Percent of Logins by Day of the Week	
Day of the Week	Percent
Sunday	12.4
Monday	15.3
Tuesday	14.9
Wednesday	15.3
Thursday	15.9
Friday	14.6
Saturday	11.6

Figure 11: Weekly Distribution of Logins at Both Safety Roadside Rest Areas



Logins by hour of the day are presented in the Table 8 and Figure 12 below. These data indicate that use is at its lowest at 5:00 am, then begins to rise steadily to its peak from 2:00 pm to 5:00 pm, and declines thereafter.

Figure 12: Hourly Distribution of Total Logins at Both Safety Roadside Rest Areas

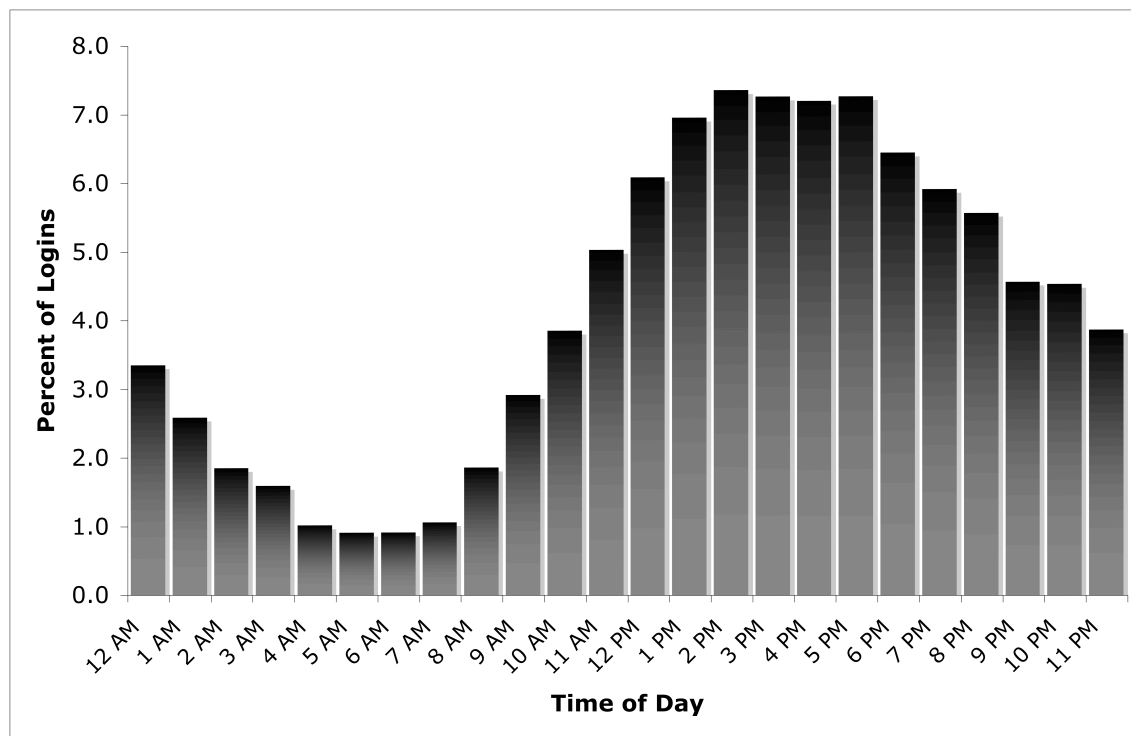


Table 8: Hourly Distribution of Total Logins at Both Safety Roadside Rest Areas

Hour of Day	% Logins
12 AM	3.3
1 AM	2.6
2 AM	1.9
3 AM	1.6
4 AM	1.0
5 AM	0.9
6 AM	0.9
7 AM	1.1
8 AM	1.9
9 AM	2.9
10 AM	3.9
11 AM	5.0
12 PM	6.1
1 PM	7.0
2 PM	7.4
3 PM	7.3
4 PM	7.2
5 PM	7.3
6 PM	6.5
7 PM	5.9
8 PM	5.6
9 PM	4.6
10 PM	4.5
11 PM	3.9

Duration of WiFi Use

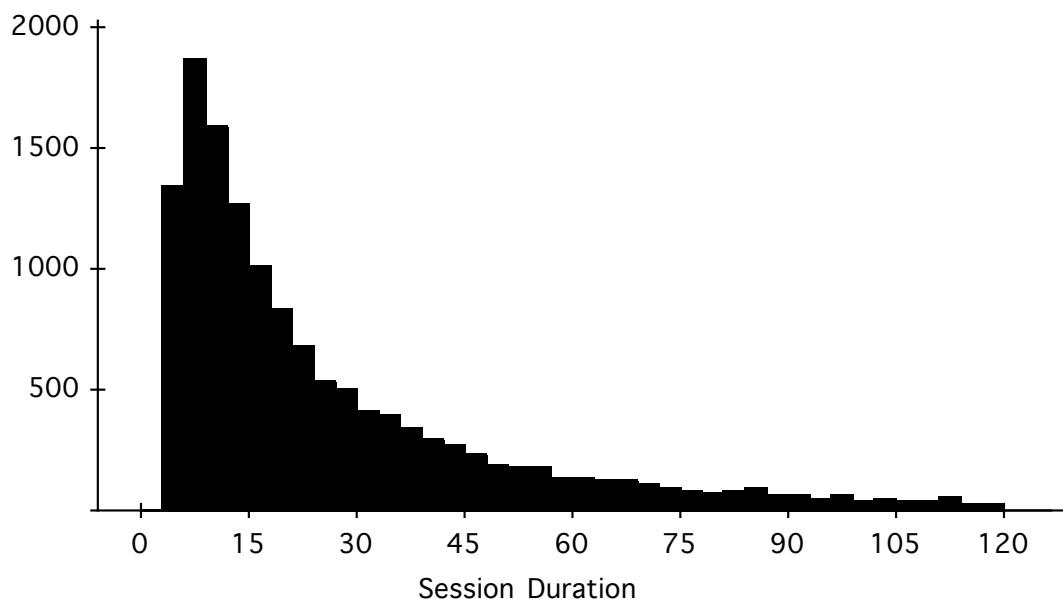
Users connected to the test system for varying lengths of times. However, the distribution is heavily skewed to the right (long tail to the right) because most users log on for a short time and very few log on for a very long time (maximum login time was 36.7 hrs). For this reason, medians and percentiles are reported as the primary results of the duration analysis (see Table 9 and Figures 13 and 14 below).

Table 9. Distribution of Duration of Logins by Month and Overall at Both Safety Roadside Rest Areas

Month	Mean	Median	InterQRang	StdDev	5th %tile	10th %tile	25th %tile	75th %tile	90th %tile	95th %tile
2007-07	37.7	17	24	69	4	5	9	38	80	139
2007-08	34.8	16	22	62	4	5	9	35	70	115
2007-09	36.7	17	23	65	5	6	9	37	76	132
2007-10	39.2	20	26	67	5	6	9	42	90	138
2007-11	53.7	19	27	125	5	6	9	44	103	198
2007-12	38.8	18	24	75	4	6	9	38	82	131
2008-01	39.9	20	26	68	4	6	10	42	87	130
2008-02	130.9	19	26	1579	4	6	9	42	85	149
2008-03	70.9	19	26	629	5	6	10	42	88	139
2008-04	65.3	20	27	503	5	6	10	44	98	193
Overall	56.0	18	25	582	4	6	9	41	86	142

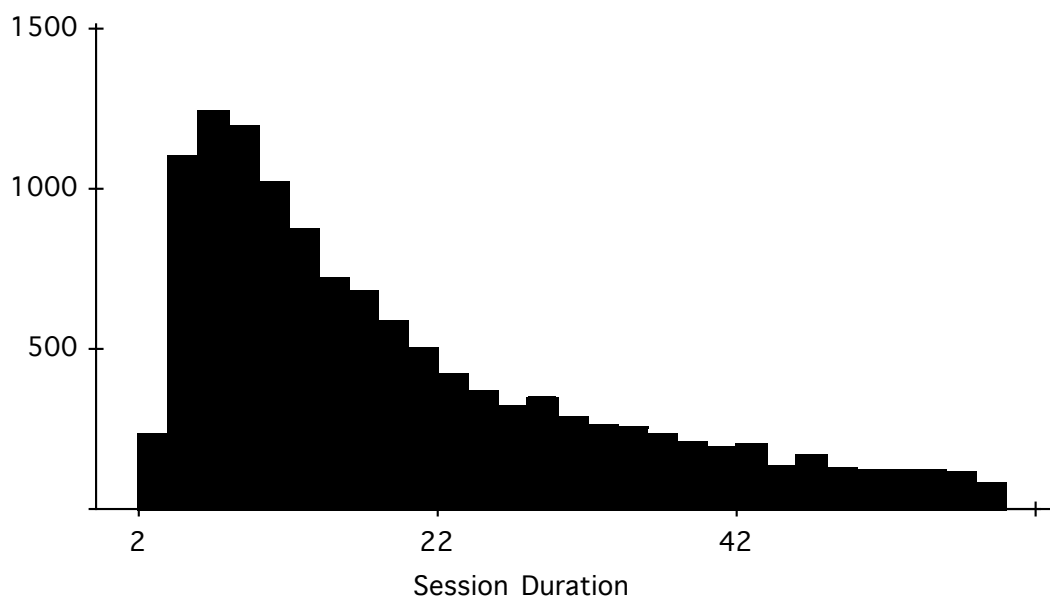
InterQRang = Inter-quartile Range
StdDev = Standard Deviation

Figure 13: Distribution of Duration (in minutes) of Total Logins at Both Safety Roadside Rest Areas (limited to two hours)



To better understand the distribution of use duration, Figure 13 is replicated in Figure 14, but limited to one hour (instead of two hours). The results of these figures suggest that most users login for five to 20 minutes and that the single most common duration is seven minutes.

Figure 14: Distribution of Duration (in minutes) of Total Logins at Both Safety Roadside Rest Areas (limited to one hour)



The mean session duration is much larger than the median and the standard deviation jumps up for February through April (see Table 9). These disparities reflect the presence of extreme outliers, particularly beginning in February. Therefore, when reporting duration, the median is reported as our primary duration outcome (not the mean, which is heavily biased by outliers). Similarly, the inter-quartile range (middle 50 percent of the sample) is used as the primary measure of dispersion and not the standard deviation. The median login time is 18 minutes and thus half of all logins were less than 18 minutes and half were over 18 minutes. The distribution can be specified in more detail as follows: 25 percent of logins lasted for nine minutes or less; 75 percent for 41 minutes or less; 90 percent for 86 minutes or less; and 95 percent for two hours and 22 minutes or less.

The question of whether session duration increases over time is explored in the monthly summary statistics presented in Table 10. These results suggest no evidence of increased login duration over the ten-month test period. However, for the months where missing days of data started to become an issue (February, March, and April), there are extremely large variances indicating possible logout problems with the hardware. As some users may not have been properly disconnected, their durations are extended beyond their true time logged on. This

caused the means and standard deviations to be too large. Notice also the medians and inter-quartile ranges are less affected by this problem.

Table 10: Summary Statistics by Month for Duration (in minutes) of Total Logins at Both Safety Roadside Rest Areas

Month Year	Count of Logins	Mean of Duration	Median of Duration	Standard Deviation of Duration	Inter-quartile Range	95th Percentile of Duration
July 2007	834	37.7	17	68.5	29	138.8
August 2007	1562	34.8	16	62.4	26	114.8
September 2007	1269	36.7	17	65.3	28	132.0
October 2007	1474	39.3	20	67.3	33	137.6
November 2007	1580	53.7	19	125.2	35	197.5
December 2007	1609	38.8	18	75.3	29	131.1
January 2008	1681	39.9	20	68.2	32	130.4
February 2008 *	1533	130.9	19	1578.8	33	148.6
March 2008 *	2007	70.9	19	628.9	32	139.2
April 2008 *	1548	60.0	20	434.4	34	183.1

* Indicates months with missing days of data and possible logout problems

Table 11 summarizes the overall duration by day of the week. The median values do change by a minute or two showing that weekend use has the shortest duration.

Table 11: Summary Statistics by Day of the Week for Duration (in minutes) of Total Logins at Both Safety Roadside Rest Areas

Day of the Week	Count of Logins	Mean of Duration	Median of Duration	Standard Deviation of Duration	Inter-quartile Range	95 th Percentile of Duration
Sunday	1888	52.8	17	553.7	33	158.1
Monday	2325	77.9	19	997.0	33	146.3
Tuesday	2258	42.7	19	113.6	33	131.0
Wednesday	2319	41.3	19	84.8	31	137.0
Thursday	2381	44.9	19	192.8	32	148.5
Friday	2187	78.4	19	791.9	32	152.3
Saturday	1738	51.1	16	579.1	29	126.0

Bytes Uploaded and Downloaded Analysis

The bytes uploaded and downloaded largely mirror the results of session duration. However, the results are presented here as a resource to policy makers. Total bytes are the sum of the uploaded and the downloaded bytes. The median upload bytes, download bytes, and total bytes by month are shown in Table 12. In Tables 13, 14, and 15, they are shown by the actual byte counts overall and then for each location. Note Tables 13, 14, and 15 are not accurate for the months starting in February when missing data entered into the analysis. Therefore, byte totals starting in February are not complete (too small). The drops in observation counts reflect the severity of the data loss (compare to Table 6).

Table 12: Median Uploaded and Downloaded Bytes by Month

Group	Upload Bytes			Download Bytes			Total Bytes		
	1st Quartile	Median	3rd Quartile	1st Quartile	Median	3rd Quartile	1st Quartile	Median	3rd Quartile
2007-07	128,814	418,649	1,233,585	632,621	2,468,536	8,358,907	880,780	3,002,389	9,795,824
2007-08	181,672	512,860	1,187,551	886,590	3,142,058	10,453,320	1,113,520	3,726,140	11,886,968
2007-09	173,039	459,704	1,253,786	908,046	2,870,706	8,727,846	1,138,075	3,396,275	10,379,641
2007-10	197,119	518,420	1,457,678	996,517	3,238,712	11,670,600	1,270,057	3,895,609	13,564,432
2007-11	178,636	522,052	1,359,438	962,364	3,390,676	11,096,689	1,160,366	4,020,262	13,051,083
2007-12	183,428	505,038	1,350,404	949,408	3,088,490	11,326,062	1,200,547	3,748,345	13,307,798
2008-01	170,754	525,449	1,352,394	893,120	3,159,463	10,916,180	1,089,849	3,830,371	12,662,351
2008-02	181,614	526,236	1,592,156	947,336	3,303,302	12,999,152	1,212,399	4,043,650	14,835,935
2008-03	188,596	537,016	1,430,591	1,063,534	3,086,635	10,510,399	1,314,354	3,711,455	12,201,779
2008-04	197,622	565,213	1,434,780	890,009	2,828,852	11,397,396	1,179,822	3,452,396	13,396,419
Total	181,134	511,895	1,364,136	924,410	3,075,976	10,783,678	1,161,514	3,709,679	12,575,889

Table 13: Sums of Upload and Download Bytes by Month

Group	Count	Upload Bytes	Download Bytes	Total Bytes
2007-07	834	1,678,468,084	22,494,482,301	24,172,950,385
2007-08	1,562	4,280,776,786	34,475,573,009	38,756,349,795
2007-09	1,269	3,189,481,459	33,902,829,747	37,092,311,206
2007-10	1,474	6,480,725,632	43,941,362,154	50,422,087,786
2007-11	1,580	5,189,269,602	43,223,371,268	48,412,640,870
2007-12	1,609	4,571,617,681	41,660,352,372	46,231,970,053
2008-01	1,681	7,099,279,700	33,654,692,593	40,753,972,293
2008-02 *	1,533	4,412,136,986	40,333,290,129	44,745,427,115
2008-03 *	2,007	5,170,264,565	41,824,544,130	46,994,808,695
2008-04 *	1,148	3,643,987,448	30,616,159,605	34,260,147,053
Total *	14,697	45,716,007,943	366,126,657,308	411,842,665,251

* Indicates months with missing data and so byte counts are low

Table 14: Tipton Sums of Upload and Download Bytes by Month

Group	Count	Upload Bytes	Download Bytes	Total Bytes
2007-07	504	808,638,163	10,465,325,521	11,273,963,684
2007-08	1,129	2,108,003,132	22,768,109,840	24,876,112,972
2007-09	981	2,457,605,650	27,818,619,730	30,276,225,380
2007-10	1,055	5,161,805,786	26,744,031,310	31,905,837,096
2007-11	1,099	3,567,938,747	28,244,784,517	31,812,723,264
2007-12	1,054	2,176,882,020	28,394,627,461	30,571,509,481
2008-01	1,243	3,915,789,745	27,760,088,399	31,675,878,144
2008-02 *	1,138	3,791,957,821	31,026,912,301	34,818,870,122
2008-03 *	1,375	3,763,901,934	31,536,393,959	35,300,295,893
2008-04 *	846	2,618,531,327	24,178,675,275	26,797,206,602
Total *	10,424	30,371,054,325	258,937,568,313	289,308,622,638

* Indicates months with missing data and so byte counts are low

Table 15: Turlock Sums of Upload and Download Bytes by Month

Group	Count	Upload Bytes	Download Bytes	Total Bytes
2007-07	330	869,829,921	12,029,156,780	12,898,986,701
2007-08	433	2,172,773,654	11,707,463,169	13,880,236,823
2007-09	288	731,875,809	6,084,210,017	6,816,085,826
2007-10	419	1,318,919,846	17,197,330,844	18,516,250,690
2007-11	481	1,621,330,855	14,978,586,751	16,599,917,606
2007-12	555	2,394,735,661	13,265,724,911	15,660,460,572
2008-01	438	3,183,489,955	5,894,604,194	9,078,094,149
2008-02 *	395	620,179,165	9,306,377,828	9,926,556,993
2008-03 *	632	1,406,362,631	10,288,150,171	11,694,512,802
2008-04 *	302	1,025,456,121	6,437,484,330	7,462,940,451
Total *	4,273	15,344,953,618	107,189,088,995	122,534,042,613

* Indicates months with missing data and so byte counts are low

Users of Three or More Logins Analysis

Of the total 8,467 logins recorded, 89.2 percent (n=7,556) logged on only once or twice in the ten-month study period. Only 10.8 percent (n=911) logged on three or more times (see Table 16). Those who logged on only once or twice had a median duration of 15 minutes, but those who logged on three times or more times had a median duration of 26 minutes. The median total bytes also reflect this difference in session duration.

This analysis of duration by number of logins suggests that heavy system users could be relatively easy to identify because they will login often and for long periods of time. These individuals can be tracked and if found to be using the system improperly, they could be blocked from further use or limited in some additional way (i.e., length of time and number of logins per month). This analysis suggests the need for a maximum time allowed and for a maximum number of logins per unit of time (month, week, or year).

Table 16: Total Bytes and Duration for Three Logins or More Over Ten-month Period.

Group	Count	%	Total Median Bytes		Session Duration	
			Median	InterQRange	Median	InterQRange
1-2 Logins	7556	89.2	3,131,238	5,077,216	15	18.5
3+ Logins	911	10.8	5,176,222	8,050,069	26	30.2

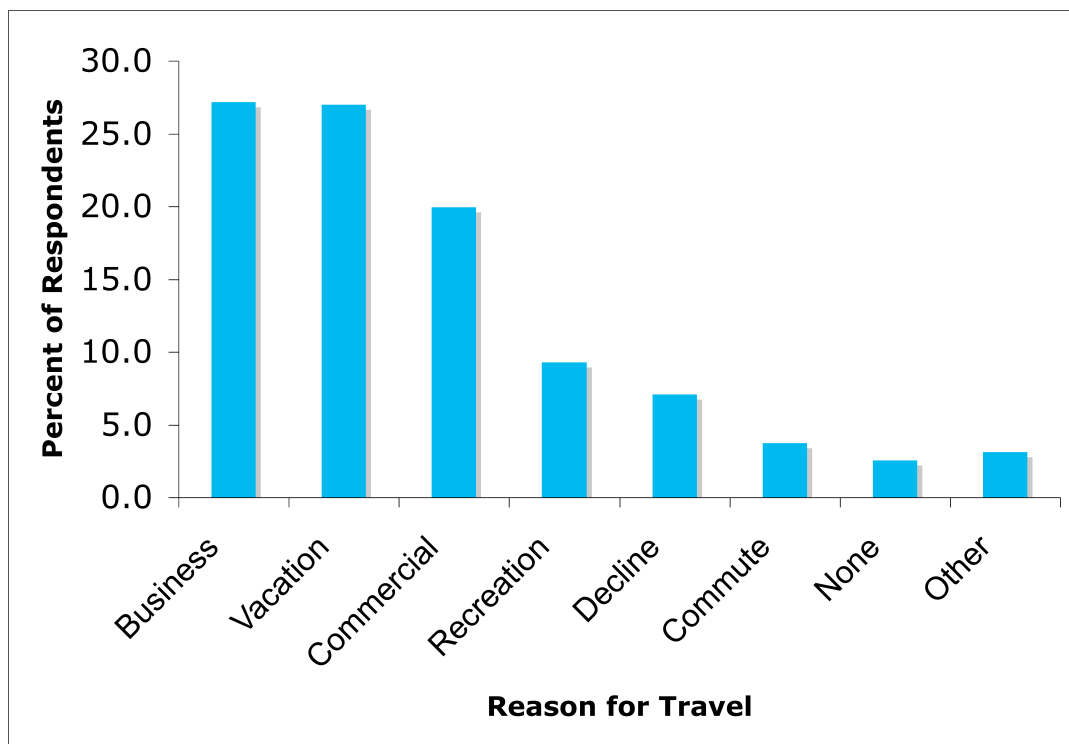
InterQRange = Inter-quartile Range (Middle 50% of sample)

V. User Survey Analysis

Between March 1 and June 30, 2008 a survey was administered to users of the WiFi service at the two Caltrans pilot demonstrations at SRRAs on State Route 99. The purpose of the survey was to gain insight into the reasons why SRRRA patrons accessed the Internets using the WiFi service. Upon logging in, each user was asked to respond to one (of three) survey questions. Once the user answered the question, they were allowed to continue with their Internet session uninterrupted. A total of 4,212 persons responded to the survey.

Question 1 asked the WiFi user about the purpose of their current trip (see Figure 15). Business and vacation travelers were the highest users of the WiFi at SRRAs. Among the people that used the WiFi service and filled out the survey, the majority were business, vacation, and commercial travelers. Very few were commute travelers.

Figure 15: Distribution of Reported Travel Purpose (N = 1,408)



Questions 2 and 3 were similar, except Question 2 was focused on current reasons for using WiFi at the SRRAs and Question 3 was focused on future usage if there were a network of WiFi at all SRRAs in California. Survey respondents were asked to check all that apply. Therefore, categories are not mutually exclusive (percents don't add up to one).

Business and personal email was the greatest reason for accessing the WiFi currently or for accessing the WiFi in the future (see Table 17). Primary travel information, defined as road conditions, weather conditions, or directions/maps was also a significant reason for accessing the WiFi. Secondary travel, defined as food, lodging, and gas station information was also noted as a reason for using the WiFi at SRRAs.

Table 17: Current and Projected Uses of WiFi Service

	Question 2 Current Use (N = 1,297)	Question 3 Would Use (N = 1,412)
Email Any*	65.3%	72.0%
Business Email	27.0%	33.6%
Personal Email	51.2%	60.9%
Personal General**	53.7%	62.3%
Travel Primary***	33.7%	48.8%
Travel Secondary****	22.1%	34.0%
Travel Any*****	41.9%	53.4%

* Includes business or personal email

** Includes personal email or download video or download music

*** Includes road conditions or weather conditions or directions/map information

**** Includes food information or lodging information or gas station information or state/Federal park information or other recreation information

***** Includes travel primary or travel secondary

VI. Conclusions and Recommendations:

The goal of this research was to determine the utility of WiFi at SRRAs for the three primary stakeholders: 1) Caltrans; 2) private WiFi service companies; and 3) the traveling public. In addition, the research was intended to inform Caltrans about business models that Caltrans might utilize to cover installation and operation costs. Based on this understanding, recommendations are made for public agency participation in WiFi partnerships with private sector service providers, with an emphasis on Caltrans and WiFi at the SRRAs.

For the public agencies, generally state departments of transportation (DOTs), WiFi at rest stops could provide a benefit to the traveling public by providing up to date information about road and weather conditions, as well as driving directions, emergency information, and information about lodging, food, and gas station availability. The expert interviews revealed that each state agency places a different value on the benefit that WiFi provides to the traveling public. It is important for public agencies implementing WiFi at rest stops to determine the value to the state in order to proceed with the appropriate business model. Based on Caltrans' goals of minimal cost to the agency and a desire for a higher level of usage than occurred during the pilot demonstration (0.3 percent of rest stop visitors accessed the WiFi), the data from this research does not support implementing WiFi at California's SRRAs.

Focus groups, conducted with people who drive California highways on a regular basis, but who had no prior experience with WiFi at SRRAs, indicated a weak interest in such a service.

Although the survey data of WiFi users at the SRRAs revealed that a high percentage of users accessed the Internet for multiple reasons such as obtaining road and weather conditions, and driving directions, the majority of users accessed the Internet to check personal and business email. Usage rates at the pilot SRRAs remained low throughout the course of the demonstration and did not meet Caltrans' expectations. Currently, users do not appear to place a high enough value on WiFi access at rest stops to pay for the cost of providing the service by user fees. Advertising as a revenue stream appears promising, but to date has not brought in enough revenue to offset all costs. Key recommendations include the following:

- 1) Current data suggests that a business model with no cost to the public sector may be challenging for the WiFi service provider. An accurate assessment of the benefit to the traveling public is important to determining how much of the installation and operation costs are appropriate for payment by a public agency.
- 2) Usage of the rest stop WiFi by DOT and other state employees working in the field may provide an additional public benefit, if such Internet access can improve job efficiency.
- 3) If user fees are charged, a period of free time may maximize the benefit to the traveling public by allowing more users to check on road and weather conditions and find directions, lodging, food, and fuel information. Providing free access to travel related sites may also serve the function of improving public safety.
- 4) Based on the experience of the states that have implemented fees for WiFi service at rest stops, users do not show a high willingness to pay for WiFi access at rest stops. Therefore, user fees may be more effective as a method to limit the amount of time that users spend on the Internet at the rest stops, rather than as a mechanisms to generate revenue. The user data results suggest a possible fee structure based on a time limit (e.g., 1.5 hours) and on a frequency limit (perhaps ten times per month). In this way, typical users would be provided with the service while limiting excessive use by the few persons that appear to log on for long periods of time. The time limit could be tailored to individual rest stops by time of day to ensure that WiFi use does not contribute to rest stop overcrowding.
- 5) While not all WiFi providers are selling advertising, some are showing a degree of success that appears promising. Currently, WiFi service providers are selling advertising that is displayed only to people accessing the Internet. This is not rest stop sponsorship or advertising that is seen by everyone at the rest stops. The effectiveness of rest stop sponsorship or rest stop wide advertising was not part of this research.

- 6) Revenue from user fees and advertising should be allocated to the partners that incur the costs. If the public agency pays for all or some of the costs, it may be necessary to include revenue sharing. If the service provider is paying the operating costs, revenue should be allocated to the service provider.

During the research period (Summer 2007 through Spring 2008) many aspects of the business models evolved, and it is likely that they will continue to do so. A number of factors could impact the longer-term outlook for WiFi at rest stops, including the following:

- 1) Wireless communication technology is evolving rapidly. Outstanding questions remain about the direction of wireless communication technology, which could impact the need for WiFi technology at rest stops.
- 2) The public's expectations about wireless communication and willingness to pay for service can be expected to change as the technology develops. Some users may consider payment for wireless communication to be a "normal" cost, while others may prefer the "free WiFi" model that has been successful at many coffee shops.

APPENDIX A

STATE BUSINESS MODEL SUMMARIES

California

Overview

The California Department of Transportation (Caltrans) entered into an agreement with the Great Valley Center (GVC) and Coach Connect for a pilot program to deploy WiFi at two Safety Roadside Rest Areas (SRRAs) in the Central Valley of California on State Route 99. The pilot sites were officially in operation at the Enoch Christoffersen and Philip S. Raine SRRAs beginning July 2007. The GVC obtained an Occupancy Agreement from Caltrans to operate at the SRRAs. GVC contracted with Coach Connect to operate the wireless Internet at the SRRAs.

WiFi Provider

The provider was Coach Connect.

Installation and Operation Costs

The installation and operation costs are divided between Coach Connect and Caltrans. In addition, University of California, Partners for Advanced Transit and Highways paid Coach Connect to collect user data and administer a survey to the WiFi customers.

Advertising Revenue

There is currently no advertising and there are no plans to sell advertising.

User Fee Structure

Internet access is provided at no cost to the user.

Connecticut.

Overview

In September 2005, the Connecticut Department of Transportation (DOT), the Federal Highway Administration (FHWA), and an advisory committee consisting of 11 regional planning agencies, 17 municipalities, and other state agencies including the Office of Environmental Planning initiated the Connecticut Statewide Rest Areas and Service Plaza Study. Other key members of the study include Earth Tech, the lead consultant group, and Fitzgerald & Halliday,

Inc. The purpose of the study was to evaluate the state's 23 service plazas and eight rest areas, including WiFi. Connecticut DOT intends to issue an Request for Proposals (RFP) to obtain a new operator for the food and fuel concessions at the 23 plaza locations. It is not known if the RFP will require WiFi.

Florida

Overview

In 2006 the Florida DOT awarded a contract to Coach Connect for a pilot program to provide WiFi to travelers at 88 locations across the state including rest areas, weigh stations, and travel information areas at no cost to the state. In 2007 the contract was canceled.

In late 2007 the Florida DOT issued an Invitation to Negotiate (ITN). Zoom Information System won the bid and was awarded a contract in January 2008. The contract is for a pilot project for one year, with an optional six-month extension. The pilot includes the four welcome centers, one Plaza Center on Florida's Turnpike, and one deployable mobile test trailer. During the pilot Zoom will test a variety of technologies. Zoom will also operate a mobile trailer so they can "randomly sample" other rest areas, to evaluate user demand. At the end of the one-year pilot the DOT will evaluate the service and the costs of providing WiFi at rest areas throughout the state. Kiosks may be included in the project on a case-by-case basis at a later date. The state will be responsible for marketing the WiFi to the public, and expects to place signs on the interstate indicating WiFi hotspots. The DOT anticipates implementing filters to restrict access to inappropriate sites.

WiFi Provider

The provider is Zoom Information Systems.

Installation and Operation Costs

Florida DOT has allocated \$160,000 for upfront (equipment and installation) costs and for periodic costs for the first year of the program. This amount is intended to cover all costs for the first year of the pilot. Costs are being paid by the division within the DOT responsible for intelligent transportation systems.

Advertising Revenue

Advertising will be allowed during the pilot. The revenue will be shared, with 60 percent allocated to Zoom and 40 percent allocated to the state.

User Fee Structure

The state does not anticipate user fees during the pilot program, but does expect user fees if the program continues beyond the pilot phase. After the pilot program, Zoom anticipates implementing user fees after 15 minutes of free access.

User Fee Revenue

After the pilot program, Zoom anticipates a 50/50 split between the state and Zoom.

Illinois State Toll Highway Authority

Overview

In June of 2006 WiFi was implemented at seven redesigned Tollway Oases, which are over-the-road pavilions/service plazas that feature food, retail services, and driver conveniences. The Tollway Oases were established through a collaborative partnership between the Illinois State Tollway Highway Authority (ISTHA) and Wilton Partners, a national real estate developer. The redevelopment of the Illinois Tollway Oases was made possible through Wilton Partners with an investment of more than \$100 million at no cost to the ISTHA or its customers. Under this public-private partnership Wilton Partners pays costs and operating expenses for all seven of the Oases. Although provision of WiFi was not a requirement of the contract, Wilton Partners does offer wireless Internet access throughout each Oasis.

WiFi Provider

AT&T provides the WiFi service at four of the Oases and Hughes Net provides service at three. The locations that Hughes Net services are on satellite.

Installation and Operation Costs

Wilton Partners paid all initial equipment costs, which were \$150 per location. Wilton Partners pays monthly fees to both AT&T and Hughes Net, with the fees ranging from \$150 to \$200 per location.

Advertising Revenue

Wilton Partners sells advertising for the initial splash page that comes up when people log in. Their customers include car insurance and car companies. AT&T and Hughes Net do not sell advertising.

User Fee Structure

Internet access is provided free to users without any time constraints.

Iowa

Overview

Free Wifi access was introduced as a pilot project in six of Iowa's rest areas in June 2005. The Iowa DOT found that the WiFi was beneficial in providing travelers with access to key highway safety information, and in helping drivers stay connected to their home and office while on the road. Under the pilot program, I-Spot provided the service at cost to the state. Although the Iowa DOT considered the pilot WiFi program a success, I-Spot went out of business. In August 2006, a state contract was awarded to Zoom Information Systems to provide WiFi service. The contract was recently extended to September 2009. There are currently 39 hotspots including interstate safety rest areas and welcome centers where Zoom provides WiFi. Zoom provides kiosks with limited Internet access. Both the state and Zoom consider this a successful business model.

WiFi Provider

Zoom Information Systems. Zoom has an agreement with Boingo to allow Boingo subscribers to use the system for free.

Installation and Operation Costs

The Iowa DOT pays all costs for the WiFi, including \$72,000 in start-up fees and a monthly fee of \$3,000 (or \$76.90 per site per month). The state owns the WiFi equipment and paid for the installation. Zoom is responsible for all costs associated with software development, web design, technical support, and providing screens and kiosks at all 39 locations. Zoom is also expected to maintain track balls, monitors, computers, content, and to periodically update equipment. Iowa is responsible for all issues regarding physical hardware and the Internet signal. The state indicated the system is operating 98 percent of the time. The state pays Zoom from their Primary Road Fund, similar to other highway projects.

Advertising Revenue

Advertising is permitted once the user leaves the portal of travel information sites. The state will not allow advertising on the monitors or kiosks. Zoom is successfully selling advertising. At this time the state is not receiving any of the revenue generated through advertising.

User Fee Structure

The user is not charged for the first 30 minutes of Internet use. The contract allows for subscription fees to be collected if the user wants to use the Internet for longer than 30 minutes. Zoom is likely to begin charging user fees Spring 2008. Zoom is interested in understanding how/if the user fees will change usage of the system. There is concern that user fees will reduce the number of users and this in turn will reduce advertising revenue. The fee will likely be \$2.99 for an additional hour or a day pass will be available. There is no time limit with paid access. Boingo subscribers can use the system for free. The Boingo subscription is \$25.00/month.

User Fee Revenue

The user fee revenue will go to Zoom. When a Boingo user logs onto the system Boingo pays Zoom 50 cents. If a person signs up for Boingo service from a rest area Boingo pays Zoom \$50.00

Kansas

Overview

The Kansas Department of Transportation (KDOT) solicited proposals for a private party to partner with the state to establish WiFi service at rest areas and visitor centers with the expressed requirement of having no cost to the state. The project was in collaboration with Kansas Highway Patrol and the Kansas Department of Commerce.

WiFi Provider

Coach Connect was awarded the initial contract for a pilot to provide WiFi at four locations. The contract ended April 30, 2008. The parties were in negotiation to extend the agreement and significantly expand the number of locations, as of April 2008.

Installation and Operation Costs

Coach Connect pays all operation and installation costs, including support services. There is no cost to KDOT for these services.

Advertising Revenue

During the pilot project, Coach Connect had the right to sell advertisements with all revenue going to Coach Connect.

User Fee Structure

Although Coach Connect was allowed to charge user fees during the pilot, they did not do so under the pilot.

Michigan

Overview

The WiFi is provided through a partnership between Michigan's Department of Information Technology, Department of Natural Resources, the Department of Transportation, the Michigan Economic Development Corporation, and SBC/AT&T. WiFi access is available at three rest

areas and welcome centers and seven state parks and harbors. WiFi activity at the rest stops has been low. The marinas have experienced the most activity.

WiFi Provider

Michigan and SBC/AT&T entered into an agreement for a three-year pilot project that will end in 2009. (SBC/AT&T did not return phone calls and was not interviewed.)

Installation and Operation Costs

All installation and operation costs are paid by SBC/AT&T. There is no cost to Michigan.

Advertising Revenue

The contract does not allow SBC/AT&T to sell advertising on the initial splash page.

User Fee Structure

Access to the www.michigan.gov and www.michigan.org sites is free, but users must pay to visit other sites. Fees for users to access the Internet vary based on plan length, and if the user is a current SBC/AT&T customer. SBC/AT&T customers who subscribe to DSL services at home or in the office have the option to pay an additional \$1.99 per month with a one-year term commitment for unlimited access to all SBC/AT&T hotspots. Those who are not currently SBC/AT&T customers can purchase a 24-hour session for \$7.95 or a monthly subscription for all SBC hotspots for \$19.95 and receive unlimited access to SBC/AT&T hotspots nationwide.

User Fee Revenue

All user fee revenue goes to SBC.

Michigan and Zoom Research

ZOOM has a contract with the Connected Vehicle Proving Center (CVPC) to install and demonstrate traveler information dissemination and collection using both WiFi and Dedicated Short Range Communication (DSRC). This is part of the Federal Vehicle Infrastructure Integration (VII) program. Funded by a grant from the state of Michigan, the CVPC is a collaborative between the Center for Automotive Research at the University of Michigan and the

Connected Vehicle Trade Association (CVTA), a private organization. The purpose of the demonstration is to send data and information between the rest area and passing cars. The drivers will not need to stop at the rest to obtain information. The demonstration will be at two locations that do not currently have WiFi.

The Rest Areas will include:

- Two 42” high definition displays that will display real-time weather, traffic, alerts and other DOT messages.
- One interactive touch screen display where travelers can find and display location-specific information they want about exit services, tourism, weather, and traffic.
- A WiFi splash page will similar information.
- A DSRC VII Wireless Access Point to communicate with both vehicles on the highway for safety information and vehicles in the Rest Area for Higher Bandwidth information.

A second phase, the demonstration will include ZOOM cameras at the rest area with the ability to count cars and trucks and determine how many pass by and how many stop at the rest area, as well as how many parking spots are available at any one time. Other ZOOM applications may also be demonstrated.

Minnesota

Overview

Zoom Information Systems was selected to manage the “Rest Area Sponsorship, Advertising and Wireless Internet (RASAWI) Program” in Minnesota, which includes providing wireless Internet access at select rest areas. Minnesota Department of Transportation (Mn/DOT) and Zoom are currently negotiating the contract including certain aspects of the wireless Internet service. The RASAWI Program will permit the introduction of kiosks at rest areas where Zoom provides wireless Internet access. Mn/DOT will have Zoom filter content available on the kiosks but not on the content users access on their own equipment using the wireless Internet access provided by Zoom. The RASAWI Program is intended to create a revenue stream from the rest area sponsorship and onsite advertising that will offset program costs with minimal investment

from Mn/DOT. Note that as of the March 2008, the contract between Minnesota and Zoom had not been executed. The contract negotiations were delayed significantly as the result of the I-35 bridge collapse in the summer of 2007. Negotiations have resumed and parties expect the contract to move forward.

WiFi Provider

Zoom Information Systems is anticipated to be the provider under a five-year contract.

Installation and Operation Costs

Zoom is anticipated to be responsible for equipment and installation costs.

Advertising Revenue

Zoom anticipates selling advertising but allocation of advertising revenue is undetermined at this time.

User Fee Structure

User fee rates are under negotiation.

User Fee Revenue

User fee revenue will be allocated to Zoom.

Nevada

Overview of System

Nevada has one rest area and three welcome centers with Internet access through a partnership between the Nevada Department of Transportation, the Las Vegas Visitors Convention Authority, Scientel Wireless, LLC., and Zoom Information Systems. Three sites use satellite reception and one uses a landline. From the state's perspective the primary reason for the WiFi is to encourage users access the free traveler information on the splash page. The secondary reason is to provide general Internet access. Funding for the hotspots and equipment is received through the Logo Sign Program, which has been producing revenue for motorist information programs

since 2002. The Maintenance and Operations Division manages the payments. There is no cost to the state.

WiFi Provider

In August 2006, Scientel Wireless was awarded a state contract to provide WiFi at the four sites. Scientel and Zoom work in partnership in Nevada.

Installation and Operation Costs

The Nevada Logo sign program paid the initial \$52,000 system installation cost and the monthly service fee of \$9,600 per year for the four sites (\$200/site/month).

Advertising Revenue

Advertising is allowed. Zoom is responsible for selling advertising under contract with Scientel, but had not done so as of April 2008. From the NDOT splash page users will have the option to go to a page that displays advertising around the perimeter with a freeway map in the center, noting highway exits. The user will be able to click on an exit sign for detailed information about the services available at that exit. Advertisers will pay to display their information and they may pay each time a user clicks on their link. Advertising revenue goes to Scientel, but there is possibility for three-way revenue sharing between the DOT, Scientel, and Zoom.

User Fee Structure

WiFi access is free for the first 30 minutes and extendable 30-minute sessions can be purchased. To use the Internet after the first 30 minutes, users must subscribe to Scientel.

User Fee Revenue

User fee revenue is allocated to Scientel.

New Mexico

Overview

On March 21, 2007 the New Mexico Department of Transportation and state Tourism Department broke ground on a new Visitor Center and Rest Area on Interstate 40 that will

feature wireless Internet, a movie theater, and a gift shop in addition to the basic necessities. The visitor center will be managed by the Tourism Department, and the Department of Transportation will run the rest area operations. The Department of Transportation is also planning a second Visitor Center and Rest Area near that will feature similar amenities and conveniences as Glenrio. Both locations are expected to open Spring 2008. Service provider status is unclear and business model parameters not specified. Note that some of this information was provided through online sources, rather than a personal interview. Information has not been verified or updated.

North Carolina

Overview

The North Carolina Department of Transportation issued an RFP in December 2007, but did not receive any proposals. The RFP specified WiFi service at no cost to the state. The state is considering issuing a new RFP and will revise their business model. However this process has just started and no decisions have been made about a revised business model.

North Dakota

Overview

After a successful six-month pilot project that began May 2003, the North Dakota Department of Transportation expanded WiFi service to include 14 visitor centers located on I-29 and I-94 in the spring of 2004.

WiFi Provider

The NDDOT researched, designed, equipped, and installed WiFi through existing DSL or fixed wireless broadband provided by local phone companies. The DSL providers at the 14 sites are contingent on location, based on ability to provide the service within the area.

Installation and Operation Costs

All installation and operation costs associated with implementing WiFi are paid for by the NDDOT. Off-the-shelf equipment was used to minimize costs.

Advertising Revenue

There is no advertising revenue.

User Fee Structure

Users access the Internet for free.

Oregon

Overview of System

The Oregon Travel Information Council (TIC) established an inter-agency agreement with the Department of State Parks and Oregon Department of Transportation to begin a two-year pilot project to provide WiFi access at seven rest areas and state parks in 2005. Initially the two-year pilot project required Road Connect (Coach Connect) to install WiFi at seven pilot state rest areas and parks. Since then Oregon has expanded WiFi to ten hotspot locations including four state parks and six rest areas.

The TIC is a semi-independent state agency or Inter-Governmental Agency (IGA), which acts as an intermediary in the interest of the state. An IGA has separate purchasing guidelines than a state department and the TIC is not required to follow RFP procedures to solicit a vendor.

When the two-year contract ended in July 2007 Coach Connect declined the offer from the TIC to extend the contract under the same terms. Since that time Coach Connect has been providing limited service to the TIC. The TIC has been paying a partner that Coach Connect works with and Coach Connect turns 100 percent of the user fee revenue over to the TIC. The TIC is considering options for future vendors and contracts.

Although the pilot project was considered a success, the limited number of sites with WiFi was thought to be detrimental to the advertising aspect of the business model. To solve this problem in the future, the Oregon TIC plans to extend WiFi to 15 or 20 additional rest areas and ten to 15 additional state parks. The Oregon TIC is in the process of negotiating with the state DOT and

Oregon State Parks for more sites in order to make the advertising business model more lucrative to a WiFi provider.

WiFi Provider

During the pilot demonstration, Coach Connect was chosen by the Oregon TIC to provide WiFi at the ten hotspot locations. Coach Connect has continued to work with the TIC since July 2007, when the contract ended in order to keep the WiFi service operating.

Installation and Operation Costs

Initially the TIC invested \$25,000 for the first seven rest areas and state parks which provided for the wireless equipment, installation and website portal. The TIC charged the Department of State Parks to provide WiFi at two additional locations. Funding to install WiFi at an additional State Park was received from an Intel grant of \$5,000. The Oregon DOT does not pay for any aspect of the WiFi service. During the pilot project Coach Connect paid for all operational costs including support services.

Advertising Revenue

Coach Connect was allowed to sell advertising under their contract with TIC, but did not do so.

User Fee Structure

During the pilot demonstration, access to Oregon's five traveler information sites was free. If users wanted to access other Internet sites they had to subscribe to Coach Connect. Rates for visitors to access sites other than the traveler information provided by TIC were \$1.99 for 20 minutes, \$3.99 for 24 hours, \$7.99 for seven days, and \$31.99 of one month.

The TIC continued charging users the same fee structure after their contract with Coach Connect expired. In the future if WiFi is expanded to additional sites and the TIC is successful with advertising, access to the Internet will be free.

User Fee Revenue

During the pilot project, user fee revenue was shared equally between Coach Connect and the TIC. Currently Oregon TIC obtains 100 percent of user fee revenue although they must also pay to operate the system. In the future, the TIC will seek a revenue sharing arrangement.

Texas

Overview of System

Texas Department of Transportation (TxDOT) began a pilot WiFi project in 2003. This pilot project proved successful and an RFP was issued in 2004. Coach Connect was selected to provide WiFi at roadside rest stops. Coach Connect was responsible for all equipment, installation, operation, and support service costs. TxDOT paid Coach Connect to develop their website portal. By October 2006 there was significant statewide usage by the public, but Coach Connect could no longer support the system at no charge to TxDOT. TxDOT purchased the equipment and began paying Coach Connect to maintain and operate the network, under an emergency contract. A new RFP was issued and a three-year contract was awarded to Zoom Information Systems in February 2008.

WiFi service is currently available at 98 hotspots including 12 welcome centers and 86 rest areas. The Texas Department of Transportation is collaborating with the Texas Historical Commission, Texas Parks and Wildlife Department and the Texas Commission on the Arts on the Traveltex.com portal.

WiFi Provider

Coach Connect was the initial provider. Zoom is the current provider.

Installation and Operation Costs

Under the new contract the state pays Zoom \$29,000 a month for everything, including the broadband, an 800 service number, system maintenance and upgrades, and all aspects of providing the WiFi service. Zoom will use the equipment owned by TxDOT. TxDOT pays Zoom from a maintenance fund.

Advertising Revenue

Zoom will pay for electronic displays and kiosks with advertising and sponsorship. Zoom pays for all of the costs associated with the kiosks. Once Zoom recoups the investment, there will be revenue sharing with TxDOT.

User Fee Structure

WiFi Internet access is available for free.

Vermont

Overview

Through the Connect Vermont Program, Vermont currently has seven welcome centers and information centers with WiFi and plans to extend the service to thirteen additional sites. WiFi is provided through a partnership with the Vermont Agency of Transportation (AOT), Department of Buildings and General Services, and the Agency of Commerce and Community Development.

WiFi Provider

On October 9, 2006, a state contract was awarded to Summit Technologies to provide WiFi at eight welcome centers and information centers for 2 years. Summit will continue to provide WiFi until October 8, 2008 with an option to renew. Summit Technologies is contracting with Airpath, a national wireless Internet service provider.

Installation and Operation Costs

The state is paying Summit Technologies to provide wireless equipment and to install and maintain the system. The kiosks are provided by the state. Average cost per site for survey, installation, and implementation is about \$10,000. When northbound and southbound sites can be linked the cost is about \$15,000 for two sites.

Advertising Revenue

Advertising is not allowed under the current contract.

User Fee Structure

The user may access the state portal page for free. To view additional sites, the cost is \$4.95 per hour, \$9.95 per day, \$19.95 per week, \$25 per month or \$250 per year.

User Fee Revenue

User fee revenue is allocated 40 percent to the state and 60 percent to Summit Technologies.

Virginia

Overview

In 2006 the Virginia Department of Transportation issued a RFP to find a vendor to implement WiFi at 41 rest areas, 11 of which included welcome centers. Although the state received one bid, the state could not agree on the business model since the vendor proposed selling advertisements. Virginia's primary concerns at the time were the lack of adequate parking supply and the repercussions that implementing WiFi could have on the existing deficiency of parking space. The state has not issued another RFP to find a vendor and intends to concentrate on maintaining the existing rest areas. Note that information about Virginia was provided through a brief telephone conversation with a Virginia DOT representative. A formal interview was never conducted.

Washington

Overview

Beginning in Summer 2006, WiFi has been available at 28 of 42 rest areas along I-5 and I-90 in Washington. Overall both the state and Road Connect (Coach Connect) agree that system use has not been as high as anticipated. Both advertising and user fee income has been limited.

WiFi Provider

On August 25th, 2006, a state contract was awarded to Parsons Transportation Group, a consultant group, which sub-contracted the responsibility of providing WiFi services at roadside rest stops to Road Connect. This contract is for five years and allows for three additional one year term extensions.

Installation and Operation Costs

Road Connect is responsible for all installation and operation costs, including support services. There is no cost to Washington in providing this service. WSDOT does however pay for limited in-house marketing and promotion services.

Advertising Revenue

The state receives 20 percent of gross revenue.

User Fee Structure

Traveler information resources and other information offered on the WSDOT site and related sites are available for free. To view additional websites, users must subscribe to Road Connect and pay \$2.95 for 15 minutes, \$6.95 for 24 hours or \$29.95 for one month of service.

User Fee Revenue

The state receives 20 percent of the gross revenue.

APPENDIX B

FOCUS GROUP SUMMARIES

FRESNO BUSINESS TRAVELER FOCUS GROUP

Evaluating Wireless Broadband System at California Safety Roadside Rest Areas

7:15 PM December 4, 2007

Nine participants

Nine respondents (eight males and one female) attended the focus group with ages ranging from 24 to 48. The average weekly mileage on California highways was 20 to 25 miles. Two drove over 500 miles each week on California highways.

Participant comments follow each question in the discussion guide below.

1. We would like to start by asking, if you ever stop at Safety Roadside Rest Areas (SRRAs). (Ask each person if they use SRRAs or not. If they use SRRAs, PROBE: why, where, how long they stay, and how often they stop.) (If they don't, PROBE why not.) Want to find out if they stop to rest, which would improve highway safety. If they never use SRRAs, PROBE do you ever stop to rest on long trips? Where? If not, why not? Do you think this is safe?

All respondents had visited SRRAs at least once in past year and eight had visited SRRAs more than once. Reasons for stopping at SRRAs included:

- Restroom break;
- Rest;
- Stretch legs;
- Walk around
- Get snacks;
- Make phone calls;
- Check email;
- Communicate with employees;
- Sleep;
- Wait for rain to stop; and
- Wash hands.

Participants in this focus group used SRRAs along Highway 99 and generally stayed between five and 15 minutes. Two stopped for an hour or more. One male noted that he stopped once a week, while another noted stopping occasionally, and another participant only stops when on a long trip. Another male participant stated a preference for stopping at restaurants, rather than rest stops.

2. For those of you who stop at SRRAs, what do you like OR dislike about them? (PROBE: Based on comments, ask them to explain any unpleasant experience or any pleasant experience. Are the services good? Are the stops clean? Do you feel safe?)

The participants liked the following (in order of preference):

- Ease of on and off;
- Having snacks available;
- Usually shady and grassy;

- Convenient place to stretch and focus eyes off of road;
- To go to restroom; and
- All of the conveniences.

Participants disliked the restrooms and lack of security. Comments related to restrooms included: they look shabby, some don't have doors, usually look dirty, toilets are dirty, there are odors, I just think of them as being dirty, I expect them to be dirty, I'd rather go to a restaurant, hotel or gas station, restrooms are always located in the back, and not safe. Comments related to safety included: they are not well lit at night, my husband doesn't like me stopping by myself, good place to get robbed, a friend was mugged while sleeping there, the lights are pretty dim, and the parking lot security is poor. Four said they felt mostly safe, two said they were sometimes safe, two never thought about it and one thought the highway patrol should drive thru the rest stops sometimes.

3. What services do you use?

The participants use all of the services, including food, restrooms, tables and benches, and the grass.

4. What do you wish they had available at SRRAs?

The participants would like the following at SRRAs:

- Play yards for children;
- More retail type facilities such as AM & PM stores;
- Attendants;
- More people (feel comfortable with more people); and
- Better signs to let people know there are rest stops ahead.

5. Those of you who said you don't stop at SRRAs, what would make you consider using them, if anything? (PROBE: to get information on what would make them stop. If they would not ever stop, PROBE to find out why.)

Participants noted the following as amenities that would make them more likely to stop at SRRAs:

- An AM & PM store;
- Restaurant (2 respondents);
- Snack bar with sandwiches and fruit;
- Live service people;
- Coin changers;
- Additional open area with shade especially in hot weather;
- Showers and places to clean up;
- Playgrounds;
- A place to sleep; and
- Computer or WiFi service (three respondents).

6. When you drive, do you ever carry a laptop, a personal digital assistant (PDA), or other device that can connect to the Internet? (For those who say yes, PROBE for what traveling purposes and how frequently by type of device.) (For those who say no, PROBE for reasons why. Do they have an AirCard, iPhone, web enabled cell phone or other type of service/equipment that does not require WiFi)

Two of the participants carry laptops, which they use for business. These two are in constant communication with employees or salesmen. Six carry other devices with them when they travel, which they use for maps, GPS, and to make business connections. Laptop and other users noted email and MapQuest as the most frequent reason for using a device that connects to the Internet. Those that don't carry a laptop or PDA noted that they use cell phones to keep in touch and this works well.

7. Do you have an air card, iPhone, web enabled cell phone or other type of service/equipment that does not require WiFi?

None of the participants carried air cards or had a web enabled cell phone, although several agreed that their phones likely did have web capability that they didn't use.

8. For those of you who carry these devices, can you tell me what device you carry every time you travel, if any? PROBE: What device and why?

The participants carry cell phones all the time and laptops occasionally.

9. (Ask everyone) If WiFi services were offered at SRRAs, would you be interested in using this service with devices that you travel with or through a public Kiosk? (If yes, PROBE: How do you think you would access the WiFi, for example using what types of devices?)

One respondent would definitely use the WiFi, and another thought it was a good idea for other people that use their computers a lot. The rest of respondents were somewhat interested in the idea. A kiosk was mentioned by one respondent, as she had seen them in other locations but four other respondents thought kiosks would be subject to damage by kids or vandals. Several participants thought the WiFi was not practical and would be targeted by vandals. Multiple respondents said the service would only be used by a small percentage of the population. Truckers were mentioned as likely users of WiFi at SRRAs. One participant was adamant that WiFi at SRRAs was a bad idea, expressing this as "a waste of money." This individual thought the money could be better used for renovations for other features at SRRAs that were higher priority.

10. How often do you think you'd use the service? For about how long would you log on? What would be the main purpose of your Internet use, for example, roadway conditions, book hotel, check with office, etc.?

The general consensus of the group was that the service would not be used often, except for business reasons. One respondent mentioned that he felt it would only be useful to those without

Internet service at home or work. Another respondent said he would not use the service because he is uncomfortable with computers.

Participants declined to discuss how long they would use the WiFi service because they did not believe they would use the service at all.

When asked why they might use the WiFi service, the one respondent who would use it, said he would use it for business. A couple of other respondents began to express some interest when he spoke, saying they might use the WiFi occasionally if they knew the convenience was there. Mapquest and finding directions was mentioned repeatedly. One respondent said he could make reservations at a hotel or restaurant.

11. What would you be willing to pay for the service, for example, first 30 minutes free and then \$2.00 after that initial time? (If not, PROBE: Is this because you don't travel with a device that can access the Internet? You don't like to use Kiosks? Why not? If you do travel with a device that can access the Internet, why would this service not interest you enough to stop? If you don't travel with these devices, how do you stay in touch?)

The pay rate for the service was perceived by most respondents as "reasonable." One respondent mentioned the rate was reasonable but could easily be supported by advertisers at those price points.

12. (Ask everyone) Do you ever make use of public WiFi services, for example, in café', airports, parks, hotels etc.? (If yes, PROBE: where, when, how frequently, how long, why, and how much they typically pay for using the services.) (If no, PROBE: why.)

Five of the participants used WiFi at other locations, such coffee shops, airports, hotels, etc. None of the participants used WiFi in parks. WiFi was predominately used for business.

13. Would you feel comfortable paying for extra time with a credit card or would you prefer to use a 3rd party organization like paypal? PROBE: If not credit card, why not? If Pay Pal, why?

While the majority of participants did not think they would use the service, those that thought they might, said they would pay with a credit card.

14. Would a daily, weekly, or monthly membership to use the WiFi service be of any interest to you? PROBE: Why, Why not?

Membership was not of interest to the participants because they felt the use of the service would be seldom if ever. They would prefer to pay as they use the service.

REDDING BUSINESS TRAVELER FOCUS GROUP

Evaluating Wireless Broadband System at California Safety Roadside Rest Areas

7:15 PM November 19, 2007

Seven participants

Seven business travelers attended the focus group (three male and four female) with ages ranging from 25 to 55. All participants in both Redding groups said they used SRRAs. Recruiters were unable to find participants that did not use the SRRAs.

Participant comments follow each question in the discussion guide below.

1. We would like to start by asking, if you ever stop at SRRAs. (Ask each person if they use SRRAs or not. If they use SRRAs, PROBE: why, where, how long they stay, and how often they stop.) (If they don't, PROBE why not.) Want to fine out if they stop to rest, which would improve highway safety. If they never use SRRAs, PROBE do you ever stop to rest on long trips? Where? If not, why not? Do you think this is safe?

All participants had visited SRRAs. Reasons for stopping at SRRAs included:

- Exercise;
- Restrooms;
- To rest;
- To use their laptop;
- Check the map; and
- Let pets out.

Participants at this focus group use SRRAs on I-5 north of Redding. Six of the participants indicated that they typically visit the SRRAs for five to 15 minutes and one stays longer than 15 minutes. One participant stops once a month, four participants stop two to three times per month, and two stop between four and five times per month. The participants at this focus group also stop at gas stations and restaurants for driving breaks.

2. For those of you who stop at SRRAs, what do you like OR dislike about them? (PROBE: Based on comments, ask them to explain any unpleasant experience or any pleasant experience. Are the services good? Are the stops clean? Do you feel safe?)

Participants liked the following (in order of preference):

- Lighting when the rest stop is lit up;
- Location – spaced at convenient intervals;
- Easy access from freeway (and exit);
- Parking for trucks and autos;
- Pet areas;
- Maps; and
- Picnic areas.

Participants disliked the following:

- Lack of security;
- Condition of restrooms;
- At many rest stops, the entrance and exit is too short (Does not allow enough time to enter or exit safely); and
- Lack of working drinking fountains.

3. What services do you use?

Participants indicated that they used the following services:

- Restrooms;
- Exercise;
- Pet areas; and
- Picnic area.

4. What do you wish they had available at SRRAs?

Participants indicated wished the following were available at SRRAs:

- Security person;
- Improved lighting;
- Better approach and departure lanes;
- Update restrooms;
- Vending machines;
- Fenced area for pets;
- Playground for children;
- WiFi access; and
- Emergency call box with direct contact to emergency services.

5. Those of you who said you don't stop at SRRAs, what would make you consider using them, if anything? (PROBE: to get information on what would make them stop. If they would not ever stop, PROBE to find out why.)

All participants at this focus group stopped at SRRAs.

6. When you drive, do you ever carry a laptop, a personal digital assistant (PDA), or other device that can connect to the Internet? (For those who say yes, PROBE for what traveling purposes and how frequently by type of device.) (For those who say no, PROBE for reasons why. Do they have an AirCard, iPhone, web enabled cell phone or other type of service/equipment that does not require WiFi)

Four of the participants indicated that they carry laptops, cell phones or PDAs. All four use their laptops every time they are on the road. Three do not carry any devices to connect to the Internet and do not own laptops or cell phones.

7. Do you have an air card, iPhone, web enabled cell phone or other type of service/equipment that does not require WiFi?

Two of the four that carry laptops have air cards.

8. For those of you who carry these devices, can you tell me what device you carry every time you travel, if any? PROBE: What device and why?

All four carry laptops and cell phones.

9. (Ask everyone) If WiFi services were offered at SRRAs, would you be interested in using this service with devices that you travel with or through a public Kiosk? (If yes, PROBE: How do you think you would access the WiFi, for example using what types of devices?)

Two said they would use WiFi if available. One participant said they would use WiFi if their air card were not in range. One participant said no, because their air card works all the time and they have no problem connecting when they need to. Six of the seven stated they had no interest in a Kiosk because of the need to wait in line to use it. One participant indicated they might use a Kiosk.

10. How often do you think you'd use the service? For about how long would you log on? What would be the main purpose of your Internet use, for example, roadway conditions, book hotel, check with office, etc.?

One said they would use the service once a month. One said three times a month. One said they would use the service four times a year. One participant said they would not use the service because their air card worked fine. Of the three laptop users, two said between five and ten minutes and one participant said 20 minutes. The one other laptop user has stated his air card works every time.

Reasons for using the service included:

- Look up directions;
- Email;
- Road condition information;
- Weather;
- Road service information;
- Hotels; and
- Restaurants.

11. What would you be willing to pay for the service, for example, first 30 minutes free and then \$2.00 after that initial time? (If not, PROBE: Is this because you don't travel with a device that can access the Internet? You don't like to use Kiosks? Why not? If you do travel with a device that can access the Internet, why would this service not interest you enough to stop? If you don't travel with these devices, how do you stay in touch?)

The three participants who would use the WiFi service thought that the first 30 minutes free and

\$2.00 per half hour after that was fine. Participants who didn't use laptops and the one with an air card did not see the benefit of the WiFi access so they would pay nothing, nor would they use the service.

12. (Ask everyone) Do you ever make use of public WiFi services, for example, in cafés, airports, parks, hotels etc.? (If yes, PROBE: where, when, how frequently, how long, why, and how much they typically pay for using the services.) (If no, PROBE: why.)

The four participants with laptops said they had used public WiFi at cafes, airports, and hotels. They volunteered that they have never used WiFi in a park location. They use the WiFi to check email and to take care of personal business (i.e., making reservations and checking restaurants).

13. Would you feel comfortable paying for extra time with a credit card or would you prefer to use a 3rd party organization like paypal? PROBE: If not credit card, why not? If Pay Pal, why?

All participants noted that if they were to use a service, then they would all want to use PayPal. None of the seven participants would use a credit card because of security concerns.

14. Would a daily, weekly, or monthly membership to use the WiFi service be of any interest to you? PROBE: Why, Why not?

In general, the participants had no interest in such a membership. They felt it required too much pre-planning and scheduling. They might use it for special situations like vacations, but not for business. One participant suggested a state park pass, where persons could buy a bank of minutes. Most of the participants liked this idea.

WALNUT CREEK BUSINESS TRAVELER FOCUS GROUP

Evaluating Wireless Broadband System at California Safety Roadside Rest Areas

8:15 PM November 28, 2007

Thirteen participants

Thirteen business travelers (nine male and four female) attended the focus group. Two of the 13 participants never stop at SRRAs for any reason. Eleven participants stop at SRRAs when they travel outside the Bay Area. The participants that travel on I-80 in the Bay Area don't stop at SRRAs because there are none in that area. Two do not stop at SRRAs at any time.

Participant comments follow each question in the discussion guide below.

1. We would like to start by asking, if you ever stop at SRRAs. (Ask each person if they use SRRAs or not. If they use SRRAs, PROBE: why, where, how long they stay, and how often they stop.) (If they don't, PROBE why not.) Want to find out if they stop to rest, which would improve highway safety. If they never use SRRAs, PROBE do you ever stop to rest on long trips? Where? If not, why not? Do you think this is safe?

Reasons for stopping at rest stops included:

- Exercise;
- Get water;
- Smoke;
- Change drivers;
- Take a nap;
- Read map and get directions;
- Make phone calls; and
- Restrooms.

Participants at this focus group use SRRAs along I-5. Three stay from five to ten minutes, five stay from ten to 20 minutes, and three stay from 20 to 30 minutes. The two participants that do not use SRRAs do not feel they are safe and there is not enough lighting. These participants stop at restaurants and gas stations.

2. For those of you who stop at SRRAs, what do you like OR dislike about them? (PROBE: Based on comments, ask them to explain any unpleasant experience or any pleasant experience. Are the services good? Are the stops clean? Do you feel safe?)

The participants like the following (in order of preference):

- Parking;
- Freeway entrance (easy in and out);
- Park like setting; and
- Cleanliness.

Participants disliked the following:

- Too dark, no lights;

- No staff;
- Not welcoming;
- Too cold in winter; and
- No food.

3. What services do you use?

The participants use the parking, rest rooms, maps and vending machines (when available).

4. What do you wish they had available at SRRAs?

Participants noted the following amenities that would make them more likely to visit SRRAs: restaurant; gas; and information booths.

5. Those of you who said you don't stop at SRRAs, what would make you consider using them, if anything? (PROBE: to get information on what would make them stop. If they would not ever stop, PROBE to find out why.)

Safety was the primary concern among the participants that don't use the SRRAs. Better lighting, security and additional services might encourage them to visit the SRRAs.

6. When you drive, do you ever carry a laptop, a personal digital assistant (PDA), or other device that can connect to the Internet? (For those who say yes, PROBE for what traveling purposes and how frequently by type of device.) (For those who say no, PROBE for reasons why. Do they have an air card, iPhone, web enabled cell phone or other type of service/equipment that does not require WiFi)

Nine participants carry laptops, one participant carries both laptop and PDA, and four participants carry PDAs. All carry cell phones. The one participant does not own or use a laptop or PDA.

7. Do you have an air card, iPhone, web enabled cell phone or other type of service/equipment that does not require WiFi?

Participants with laptops have either an air card or use WiFi when it is available.

8. For those of you who carry these devices, can you tell me what device you carry every time you travel, if any? PROBE: What device and why?

Participants carry these devices every time they travel.

9. (Ask everyone) If WiFi services were offered at SRRAs, would you be interested in using this service with devices that you travel with or through a public Kiosk? (If yes, PROBE: How do you think you would access the WiFi, for example using what types of devices?)

The participants without laptops thought the kiosks would be good. All participants agreed that they would use the WiFi access at SRRAs. If there were WiFi at SRRAs the participants wanted a high-speed connection and a comfortable setting including tables and chairs (like a coffee shop). The participants all agreed that they did not want WiFi at SRRAs if it was going to be paid for with tax dollars. This group said there are higher priorities before adding WiFi, such as security, cleanliness, and improved lighting.

10. How often do you think you'd use the service? For about how long would you log on? What would be the main purpose of your Internet use, for example, roadway conditions, book hotel, check with office, etc.?

The participants would use WiFi at SRRAs if it were an emergency and for less than 30 minutes. They would check email, get directions, and find services, such as tow trucks and repair garages.

11. What would you be willing to pay for the service, for example, first 30 minutes free and then \$2.00 after that initial time? (If not, PROBE: Is this because you don't travel with a device that can access the internet? You don't like to use Kiosks? Why not? If you do travel with a device that can access the internet, why would this service not interest you enough to stop? If you don't travel with these devices, how do you stay in touch?)

All participants agreed that \$2 for a half hour after one free half hour was reasonable.

12. (Ask everyone) Do you ever make use of public WiFi services, for example, in cafés, airports, parks, hotels etc.? (If yes, PROBE: where, when, how frequently, how long, why, and how much they typically pay for using the services.) (If no, PROBE: why.)

The nine laptop users indicated they use cafes, hotel, and other locations to connect to the internet. Most don't pay for the service. They don't use the service for more than 30 minutes and generally for business, to check email, to connect with the office, and to confirm reservations.

13. Would you feel comfortable paying for extra time with a credit card or would you prefer to use a 3rd party organization like paypal? PROBE: If not credit card, why not? If Pay Pal, why?

The majority of participants prefer credit cards for ease of access.

14. Would a daily, weekly, or monthly membership to use the WiFi service be of any interest to you? PROBE: Why, Why not?

None of the participants were interested in a membership-based service.

LOS ANGELES RECREATION TRAVELER FOCUS GROUP

Evaluating Wireless Broadband System at California Safety Roadside Rest Areas

November 14, 2007

Twelve Participants

Twelve participants (seven male and five female) attended the focus group with ages ranging from 25 to 55. Ten of the participants used SRRAs and two did not.

Participant comments follow each question in the discussion guide below.

1. We would like to start by asking, if you ever stop at SRRAs. (Ask each person if they use SRRAs or not. If they use SRRAs, PROBE: why, where, how long they stay, and how often they stop.) (If they don't, PROBE why not.) Want to find out if they stop to rest, which would improve highway safety. If they never use SRRAs, PROBE do you ever stop to rest on long trips? Where? If not, why not? Do you think this is safe?

Reasons for stopping at SRRAs included:

- Restrooms
- Rest;
- Comfort;
- Change drivers;
- Get snacks;
- Get directions/maps;
- Walk pet; and
- Use cell phone.

Participants used SRRAs along highways 5, 15, 110, 10, and 91. Four stay at SRRAs from five to 15 minutes, five stay from 15 to 30 minutes, and one stays for 45 to 90 minutes. Nine of the participants said that how often they stop depends on the length of their trip or when they needed to use the rest room. One woman stated that she stops every three hours based on Department of Motor Vehicle recommendations.

Of the two participants that do not use SRRAs, one is anxious to get to his destination and does not want to take the time to stop, and the other prefers to use other facilities, such as restaurants.

2. For those of you who stop at SRRAs, what do you like OR dislike about them? (PROBE: Based on comments, ask them to explain any unpleasant experience or any pleasant experience. Are the services good? Are the stops clean? Do you feel safe?)

Participants liked the following (in order of preference):

- Restrooms are clean;
- Pet area;
- Convenience – don't have to leave freeway to visit rest stop;
- Park-like settings;
- Food;

- Availability of brochures and maps;
- Recent availability of ice cream;
- Updated facilities; and
- BBQ areas.

Participants disliked the currently available food choices and would like healthier food choices.

3. What services do you use?

The participants use the restrooms, pet area, vending machines, and picnic areas.

4. What do you wish they had available SRRAs?

The participants would like the following at SRRAs:

- Better (healthy) food choices;
- Internet service;
- Free WiFi;
- Places to recharge cellular phones and laptops; and
- Large common area inside with inside restroom like in other states.

5. Those of you who said you don't stop at SRRAs, what would make you consider using them, if anything? (PROBE: to get information on what would make them stop. If they would not ever stop, PROBE to find out why.)

Participants noted the following as amenities that would make them more likely to visit SRRAs:

- Improved (healthy) choices of food;
- Special areas for trucks away from passenger vehicles;
- Offset parking spaces;
- Special brochures on area's history; and
- WiFi.

6. When you drive, do you ever carry a laptop, a personal digital assistant (PDA), or a web enabled cell phone that can connect to the Internet? (For those who say yes, PROBE for what traveling purposes.) (Do they check highway conditions? Book hotels, check tourist attractions, etc.) (For those who say no, PROBE for reasons why.)

All twelve participants carry one or more of the devices when traveling.

7. Do you have an air card, iPhone, web enabled cell phone or other type of service/equipment that does not require WiFi?

Participants did not respond specifically to this question.

8. For those of you who carry these devices, can you tell me what device you carry every time you travel, if any? PROBE: What device and why?

All 12 participants carry cell phones, seven also carry a laptop, and four also carry a PDA.

9. (Ask everyone) If WiFi services were offered at SRRAs, would you be interested in using this service with devices that you travel with or through a public Kiosk? (If yes, PROBE: How do you think you would access the WiFi, for example using what types of devices?)

All 12 stated they would be interested in this service if it were free. Most said they would use their laptops. Three said they would like to use a Kiosk.

- 10 How often do you think you'd use the service? For about how long would you log on? What would be the main purpose of your Internet use, for example, roadway conditions, book hotel, check with office, etc.?

Participants said they would use the service every time they stopped at a SRRa. Most did not think the WiFi would impact the length of time they spent at SRRAs. However, three would stay longer and one would increase her time at SRRAs by up to an hour to allow her kids to play games on the Internet. Reasons for accessing the WiFi included, to get directions, make reservations, check email, check entertainment sources, for business, and to check road and weather conditions.

11. What would you be willing to pay for the service, for example, first 30 minutes free and then \$2.00 after that initial time? (If not, PROBE: Is this because you don't travel with a device that can access the Internet? You don't like to use Kiosks? Why not? If you do travel with a device that can access the Internet, why would this service not interest you enough to stop? If you don't travel with these devices, how do you stay in touch?)

This question prompted a great deal of discussion. Most participants believed WiFi service should be free. They noted that the public library offers free Internet use for an hour using public computers and unlimited wireless access. Some participants did not see a reason to pay for the service when they can find an open WiFi signal somewhere and can drive until they find access. Others use their air cards or PDAs. Some thought that if Caltrans provided the WiFi they would need to configure their laptop to use the signal and that seemed like a lot of trouble. Others said they might use a kiosk, but worried about the lines. They wondered how many kiosks would be available. One man stated that the entire state of Washington is covered with WiFi access, courtesy of Microsoft. Others agreed that if Caltrans did not want to pay for it they should get a corporate sponsor.

12. (Ask everyone) Do you ever make use of public WiFi services, for example, in cafés, airports, parks, hotels etc.? (If yes, PROBE: where, when, how frequently, how long, why, and how much they typically pay for using the services.) (If no, PROBE: why.)

All 12 participants use these sources for Internet access. They pay \$10 at hotels and \$2 at cafes. They did not seem to mind paying for the service at these facilities.

13. Would you feel comfortable paying for extra time with a credit card or would you prefer to use a 3rd party organization such as paypal? PROBE: If not credit card, why not? If Pay Pal, why?

None of the participants would use a credit card, due to the possibility of identity theft. One participant noted, "You don't know who is next to you at a rest stop." They liked the idea of PayPal. Some said they would prefer to put cash in a machine to pay for access. They stated that ATMs are available at rest stops so people could get cash.

14. Would a daily, weekly, or monthly membership to use the WiFi service be of any interest to you? PROBE: Why, Why not?

Participants agreed that a daily pass for Internet usage would work best. They could purchase the membership online before a trip for the specific travel day. Anything longer than a daily pass would not be used since they felt they would be paying for days when they would not be using the service.

REDDING RECREATION TRAVELER FOCUS GROUP

Evaluating Wireless Broadband System at California Safety Roadside Rest Areas

5:00 PM November 19, 2007

Eleven participants

Eleven participants (four male and seven female) between the ages of 25 and 55 attended the focus group. All participants used SRRAs. Recruiters were unable to find participants that did not use the SRRAs.

Participant comments follow each question in the discussion guide below.

1. We would like to start by asking, if you ever stop at SRRAs. (Ask each person if they use SRRAs or not. If they use SRRAs, PROBE: why, where, how long they stay, and how often they stop.) (If they don't, PROBE why not.) Want to fine out if they stop to rest, which would improve highway safety. If they never use rest stops, PROBE do you ever stop to rest on long trips? Where? If not, why not? Do you think this is safe?

Reasons for stopping at SRRAs included:

- Easy access from the freeways;
- Restrooms;
- To rest;
- Park-like environment
- Well lit (note, participants stated they only stop at the rest stops that are well lit);
- Get snacks;
- Information on recreation and maps; and
- Conveniently spaced along freeway.

Participants at this focus group stop at SRRAs along I-5. They travel from Redding to Oregon, Redding to the Bay Area, and Redding to Southern California. Six stay for five to 15 minutes, three stay for 15 to 20 minutes and two stay for longer than 20 minutes. Many of the participants stopped multiple times during a trip. Three stop at least once during a trip, three stop two times per trip, and two stop three or more times during a trip. Participants also stop at gas stations and restaurants.

2. For those of you who stop at SRRAs, what do you like OR dislike about them? (PROBE: Based on comments, ask them to explain any unpleasant experience or any pleasant experience. Are the services good? Are the stops clean? Do you feel safe?)

Participants like the following (in order of preference)

- Exercise;
- Tables;
- Rest rooms;
- Maps; and
- Pet areas.

Participants disliked the following:

- Poor lighting at a lot of rest stops (safety concern for women with children);
- Drinking water because it “looks dirty” (six participants);
- Bathrooms are out of paper and out of soap (not well maintained);
- One participant said the grounds were not picked up, but the rest of the group disagreed and said “they make it look pretty until you get inside”;
- Often the rest stops are closed; and
- Not well marked as to where cars should park and trucks should park.

3. What services do you use?

Participants use the restrooms, pet area, vending machines, and picnic areas.

4. What do you wish they had available at SRRAs?

Participants would like the following at SRRAs:

- Security patrol;
- Lighted signs;
- Food service;
- Air and water for vehicles;
- Dumping station for RVs;
- Current information on road conditions;
- Internet connection (one participant); and
- Cell phone boosters.

5. Those of you who said you don't stop at SRRAs, what would make you consider using them, if anything? (PROBE: to get information on what would make them stop. If they would not ever stop, PROBE to find out why.)

All participants stop at rest stops.

6. When you drive, do you ever carry a laptop, a personal digital assistant (PDA), or other device that can connect to the Internet? (For those who say yes, PROBE for what traveling purposes and how frequently by type of device.) (For those who say no, PROBE for reasons why. Do they have an air card, iPhone, web enabled cell phone or other type of service/equipment that does not require WiFi)

Six of the participants carry laptops. Of those six, four also carry cell phones. One respondent carries a cell phone only. Four participants don't own these or other devices.

7. Do you have an air card, iPhone, web enabled cell phone or other type of service/equipment that does not require WiFi?

Two of the six laptop users have air cards.

8. For those of you who carry these devices, can you tell me what device you carry every time you travel, if any? PROBE: What device and why?

The seven laptop and cell users use the devices everyday and on all trips.

9. (Ask everyone) If WiFi services were offered at SRRAs, would you be interested in using this service with devices that you travel with or through a public Kiosk? (If yes, PROBE: How do you think you would access the WiFi, for example using what types of devices?)

Ten respondents stated that if WiFi were available and they had a device to use it, they would use the service. They would prefer to use a Kiosk for this service.

10. How often do you think you'd use the service? For about how long would you log on? What would be the main purpose of your Internet use, for example, roadway conditions, book hotel, check with office, etc.?

Participants said they would use the service every time they stopped at a rest stop. Seven would use the service for five to ten minutes, three would use the service for ten to 15 minutes and one would use the service for 20 minutes. Eight would check road conditions and three would use the service for business. Other reasons for using the WiFi included checking the weather, making reservations and checking for recreation locations.

11. What would you be willing to pay for the service, for example, first 30 minutes free and then \$2.00 after that initial time? (If not, PROBE: Is this because you don't travel with a device that can access the Internet? You don't like to use Kiosks? Why not? If you do travel with a device that can access the Internet, why would this service not interest you enough to stop? If you don't travel with these devices, how do you stay in touch?)

All participants agreed that 30 minutes free and \$2 for a half hour after that was acceptable. Participants stated that the only reason they would not like a kiosk is if there was a long wait time due to long lines.

12. (Ask everyone) Do you ever make use of public WiFi services, for example, in cafés, airports, parks, hotels etc.? (If yes, PROBE: where, when, how frequently, how long, why, and how much they typically pay for using the services.) (If no, PROBE: why.)

Eight participants said they have used WiFi access in public places. Six have used it two times in a year, one participant has used it six times in a year, and one participant about twice a month. Note: only seven participants own a device to access the web, but eight said they had used the services of a public WiFi. This is because one participant uses someone else's device.

Participants used the WiFi connection for a variety of reasons including:

- Check reservations;
- Car rental;
- Hotels;
- Road conditions;

- Weather;
- Restaurant reservations;
- Directions; and
- Check recreation locations/hours.

12. Would you feel comfortable paying for extra time with a credit card or would you prefer to use a 3rd party organization like paypal? PROBE: If not credit card, why not? If Pay Pal, why?

Seven people said they prefer PayPal and four respondents stated they would use their credit card. Of those who indicated PayPal, five said they would like this method of payment for security reasons and two mentioned convenience.

13. Would a daily, weekly, or monthly membership to use the WiFi service be of any interest to you? PROBE: Why, Why not?

Five participants would prefer a daily membership, one wanted a weekly membership, two stated monthly membership, and three had no preference. Respondents that liked the daily membership appreciated the ability to purchase the service as needed on the days they traveled. Those who mentioned monthly membership said they would expect a discount if they purchased a monthly membership.

WALNUT CREEK RECREATION TRAVELER FOCUS GROUP

Evaluating Wireless Broadband System at California Safety Roadside Rest Areas

6:00 PM November 28, 2007

Fifteen participants

Fifteen participants (seven male and eight female) attended the focus group with ages ranging from 25 to 55. Eleven participants were SRRAs users and four stated they did not stop at SRRAs. (During the discussion, it became clear that all but two participants stopped at SRRAs.)

Participant comments follow each question in the discussion guide below.

1. We would like to start by asking, if you ever stop at SRRAs. (Ask each person if they use SRRAs or not. If they use SRRAs, PROBE: why, where, how long they stay, and how often they stop.) (If they don't, PROBE why not.) Want to fine out if they stop to rest, which would improve highway safety. If they never use SRRAs, PROBE do you ever stop to rest on long trips? Where? If not, why not? Do you think this is safe?

Reasons for stopping at SRRAs included:

- Stretch;
- Change diapers;
- Smoke;
- Snacks; and
- Restrooms.

Participants at this focus group used SRRAs along Highways 5, 80, and 880. The majority (nine) visit SRRAs for ten to 15 minutes. Two visit for just five to ten minutes and two visit for 20 to 30 minutes. The group agreed that they stop on average two times during a ten hour trip and at least once for a five hour trip. Participants with pets or children may stop more often than stated above. Both of the participants that do not use SRRAs stated that they used gas stations instead. They felt they could take care of all their needs (gas, rest rooms, and snacks) with one stop. Safety was also an issue for the female that did not use rest stops.

2. For those of you who stop at SRRAs, what do you like OR dislike about them? (PROBE: Based on comments, ask them to explain any unpleasant experience or any pleasant experience. Are the services good? Are the stops clean? Do you feel safe?)

The participants liked the following (in order of preference):

- Parking;
- Freeway entrance (easy in and out);
- Snacks;
- Maps;
- Lights;
- Lawns to rest on;
- Pet areas;
- Lots of people around; and

- Cleanliness.

Participants disliked the following (most to least):

- Water in drinking fountains (dirty and tastes funny on I-80 North);
- Dirty restrooms;
- Lack of security; and
- No play structure for children.

3. What services do you use?

Participants use the pet area, the vending machines, picnic areas, and maps.

4. What do you wish they had available at SRRAs?

The participants would like the following at SRRAs:

- Massage chairs;
- Play structure for children;
- More lights (some rest stops have no lighting and so don't stop at night);
- Security patrol;
- Cell phone reception;
- Changing tables for children in rest room;
- Newspaper vending machines;
- Snack vending machines (some rest stops don't have vending machines);
- Water and air stations for cars/trucks;
- Map machines;
- Showers; and
- Destination guide/coupon books (i.e., the ability to obtain coupons for money off at local attractions, hotels, restaurants, etc).

5. Those of you who said you don't stop at SRRAs, what would make you consider using them, if anything? (PROBE: to get information on what would make them stop. If they would not ever stop, PROBE to find out why.)

The female that did not use the SRRAs said she didn't feel safe. She stated that if security was provided, then perhaps she would stop. The male participant that did not stop at SRRAs said he might stop if gas were available.

6. When you drive, do you ever carry a laptop, a personal digital assistant (PDA), or other device that can connect to the Internet? (For those who say yes, PROBE for what traveling purposes and how frequently by type of device.) (For those who say no, PROBE for reasons why. Do they have an AirCard, iPhone, web enabled cell phone or other type of service/equipment that does not require WiFi)

Six participants travel with a laptop, one travels with a PDA, and all 15 travel with cell phones.

7. Do you have an air card, iPhone, web enabled cell phone or other type of service/equipment that does not require WiFi?

A few participants with laptop/PDA have air cards and connect to the Internet.

8. For those of you who carry these devices, can you tell me what device you carry every time you travel, if any? PROBE: What device and why?

All participants carry these devices with them when they travel. Eight participants said they don't carry these devices while on vacation because they want to "get away" from business and relax.

9. (Ask everyone) If WiFi services were offered at SRRAs, would you be interested in using this service with devices that you travel with or through a public Kiosk? (If yes, PROBE: How do you think you would access the WiFi, for example using what types of devices?)

Seven of the 15 participants said they would use the WiFi access at SRRAs, if available. This sparked some discussion, participants felt that if there was a kiosk, then there should be time limits for use. Others felt kiosks would be vandalized unless there was security. The seven that initially said they would use the service, seemed to change their minds when the issue of safety came up. They expressed fear that opening their expensive laptops would present a tempting target for thieves.

10. How often do you think you'd use the service? For about how long would you log on? What would be the main purpose of your Internet use, for example, roadway conditions, book hotel, check with office, etc.?

Participants said they might use the service if they felt safe. Others said they would not connect to the Internet at rest stops because they preferred to do this at restaurants. Some also noted that computers are available at hotels so they don't need to carry the equipment. There was not a clear count of how often many would use WiFi service at SRRAs, because many seemed to talk themselves out of using their equipment at a SRRa during the discussion. If they did use the WiFi at SRRAs, two participants said they would use the service for 30 minutes and one participant said one hour. They would check email and road and weather conditions.

11. What would you be willing to pay for the service, for example, first 30 minutes free and then \$2.00 after that initial time? (If not, PROBE: Is this because you don't travel with a device that can access the Internet? You don't like to use Kiosks? Why not? If you do travel with a device that can access the Internet, why would this service not interest you enough to stop? If you don't travel with these devices, how do you stay in touch?)

All participants agreed that \$2.00 for a half hour after one free half hour was reasonable.

12. (Ask everyone) Do you ever make use of public WiFi services, for example, in cafés, airports, parks, hotels etc.? (If yes, PROBE: where, when, how frequently, how long, why, and how much they typically pay for using the services.) (If no, PROBE: why.)

All seven participants with Internet capability use cafes, hotels, airports, etc. They use the Internet to check email, confirm reservations, and to check road conditions and weather.

13. Would you feel comfortable paying for extra time with a credit card or would you prefer to use a 3rd party organization like paypal? PROBE: If not credit card, why not? If Pay Pal, why?

The majority of participants preferred to pay using credit cards for ease of access.

14. Would a daily, weekly, or monthly membership to use the WiFi service be of any interest to you? PROBE: Why, Why not?

The participants preferred a “pay-as-you-go” payment structure since they don’t visit SRRAs very often. They thought membership might be acceptable for frequent travelers, but not for occasional recreation travelers.

ONTARIO TRUCKER FOCUS GROUP, NUMBER 1

Evaluating Wireless Broadband System at California Safety Roadside Rest Areas

5:00 PM December 6, 2007

Five participants

Five participants (four male and one female) attended this focus group. Four of the truck drivers were long distance truckers and one was a local (LA Basin) trucker.

Note: Recruiting truck drivers to the focus groups was difficult as most focus group locations do not have parking for large trucks. In addition, truckers feel that if they are not on the road they are not making money. The focus group was held at a hotel in Ontario that was within a half-mile from the largest truck stop in America. To solve the problem of limited parking at the hotel, the participants were shuttled to the focus group facility.

1. We would like to start by asking, how much time you spend on the road each year? How do you typically use SRRAs while you travel?

The five truckers spend from 300 to 340 days on the road each year. Four participants said they use SRRAs for the restrooms and all five stated they use the SRRAs to sleep. Participants said they stop for five to 15 minutes for a restroom break. For sleeping, they stop from three to eight hours. The truckers said it is much easier to stop for a restroom break at a SRRAs because of the easy on/off freeway access. If they stop at a truck stop the restroom break can take up to 45 minutes.

2. What do you like OR dislike about SRRAs? (PROBE: Based on comments, ask them to explain any unpleasant experience or any pleasant experience. Are the services good? Are the stops clean? Do you feel safe?)

The truckers like the following at SRRAs:

- Easy access;
- Cleanliness; and
- Lighting.

The truckers disliked the following at SRRAs:

- Hookers;
- Parking;
- Illicit sexual activity;
- Drugs;
- Cars and RVs in truck parking spots;
- Lack of parking;
- No parking for oversized rigs;
- No security; and
- California Highway Patrol surprise inspections.

The truckers stated that criminal activity at SRRAs in California is excessive. Participants complained that many rest stops are closed, which is very difficult on truckers. When a SRRRA is closed they have nowhere to park. If they park on the street they will get a ticket and if they go to a truck stop they must purchase gas or merchandise. They acknowledge that the SRRAs are sometimes closed because of the criminal activity and thought that additional patrols at the SRRAs would reduce the crime.

3. What services do you use?

Truckers use the restrooms, pay phones, trash cans, vending machines, state information booklets, and highway maps.

4. What do you wish they had available at SRRAs?

Truckers would like the following at SRRAs:

- Separate parking for trucks;
- Larger parking spaces;
- Larger lots;
- Security;
- Open more often (too many closures);
- More rest stops (every 40 to 50 miles);
- Free truck route maps;
- Free road maps;
- Construction information (local road closures);
- Amber Alerts (truckers believe they could help find people because they are on the road all the time); and
- Direct line to law enforcement (truckers see crime and believe they should be able to report it directly to law enforcement);

The truckers noted that in Washington State, law enforcement conducts “ride alongs” with truckers to see highway activity from a trucker’s perspective. They see people taking drugs and drinking while driving, using laptops, etc. The truckers thought this was a good program.

5. What are your communication needs while you travel?

The truckers noted the need to communicate with:

- Dispatch;
- Family;
- Other truckers;
- 911; and
- Customers.

Participants stated that truck driving is the loneliest profession and they pass the time by calling family and friends while on the road.

6. How do you typically communicate while you are traveling on the road?

All participants use cell phones to communicate. One used QualCom (to communicate directly with the dispatcher), three had laptops, and they also used citizen band (CB) radios.

7. When you drive, do you ever carry a laptop, a personal digital assistant (PDA), or a web enabled cell phone that can connect to the Internet? (For those who say yes, PROBE for what traveling purposes.) (Do they check highway conditions? Book hotels, check tourist attractions, etc.) (For those who say no, PROBE for reasons why.)

Three participants have laptops. Two participants that don't carry laptops carry cell phones. One of the two said he was planning on purchasing a laptop in the near future. Four participants have PDAs. Participants carry these devices to contact family, get news, for weather information, for general communication, and to search for loads (work).

8. For those of you who carry these devices, can you tell me what device you carry every time you travel, if any? PROBE: What device and why?

All five participants said they always carry their cell phones and the laptop users always carry their laptops.

9. (Ask everyone) If WiFi services were offered at SRRAs, would you be interested in using this service with devices that you travel with or through a public Kiosk? (If yes, PROBE: How do you think you would access the WiFi, for example using what types of devices?)

One participant has an air card so WiFi would not interest him. All five participants said they don't use SRRAs for this purpose. They go to truck stops when they want to use their laptops and PDAs to find loads. Participants worried about using WiFi at SRRAs because the access would not be secure. The truckers said they had greater priorities than WiFi at SRRAs. The issue of rest stops being closed is their top priority. One participant stated she might use the kiosks to check on her family from time to time throughout the day. Others thought the kiosks would be vandalized.

10. How often do you think you'd use the service? For about how long would you log on? What would be the main purpose of your Internet use, for example, roadway conditions, book hotel, check with office, etc.?

Because the entire group said they would not use WiFi at rest stops this question did not apply.

11. What would you be willing to pay for the service, for example, first 30 minutes free and then \$2.00 after that initial time? (If not, PROBE: Is this because you don't travel with a device that can access the internet? You don't like to use Kiosks? Why not? If you do travel with a device that can access the Internet, why would this service not interest you enough to stop? If you don't travel with these devices, how do you stay in touch?)

The truckers had no interest in WiFi at SRRAs, because they prefer truck stops for Internet access. At truck stops WiFi is generally free. The primary purpose for using the Internet for

truckers is to search for loads and doing this at truck stops has the added benefit of gathering information through word of mouth. When truckers are at SRRAs they are not social and lock their trucks to sleep. If they did use WiFi at SRRAs it would be to find loads, check weather, and road conditions.

12. (Ask everyone) Do you ever make use of public WiFi services, for example, in cafés, airports, parks, hotels etc.? (If yes, PROBE: where, when, how frequently, how long, why, and how much they typically pay for using the services.) (If no, PROBE: why.)

All of the truckers use public WiFi at truck stops.

13. Would you feel comfortable paying for extra time with a credit card or would you prefer to use a 3rd party organization like PayPal? PROBE: If not credit card, why not? If Pay Pal, why?

The truckers did not want to pay since their time on the Internet is rather lengthy. Searching for loads takes an hour or more. They would not want to pay for this time.

14. Would a daily, weekly, or monthly membership to use the WyFy service be of any interest to you? PROBE: Why, Why not?

The group did not want to pay for the service, so membership did not appeal to them.

ONTARIO TRUCKER FOCUS GROUP, NUMBER 2

Evaluating Wireless Broadband System at California Safety Roadside Rest Areas

7:15 PM December 6, 2007

Five participants

Five male participants took part in trucker group number 2. All five are long distance truckers and all five use SRRAs.

Note: Recruiting truck drivers to the focus groups was difficult as most focus group locations do not have parking for large trucks. In addition, truckers feel that if they are not on the road they are not making money. The focus group was held at a hotel in Ontario that was within a half-mile from the largest truck stop in America. To solve the problem of limited parking at the hotel, the participants were shuttled to the focus group facility

1. We would like to start by asking, how much time you spend on the road each year? How do you typically use SRRAs while you travel?

Participants spend between 280 and 300 days on the road. They use SRRAs for the restrooms, telephones, vending machines, to rest, picnic areas, and smoke breaks.

2. What do you like OR dislike about SRRAs? (PROBE: Based on comments, ask them to explain any unpleasant experience or any pleasant experience. Are the services good? Are the stops clean? Do you feel safe?)

Truckers like the following at SRRAs:

- Easy access from freeway;
- Cleanliness;
- Room to park;
- Place to walk/stretch your legs;
- Place to rest/sleep;
- Pet areas; and
- Saves time (truck stops take time to get in and out of).

Truckers dislike the following at SRRAs:

- Rest areas are often closed;
- Lack of security;
- Non-truckers using truck parking;
- Not enough spots to park; and
- Transients and hookers.

3. What services do you use?

The truckers use the restrooms, telephones, vending machines, rest areas, and picnic areas.

4. What do you wish they had available at SRRAs?

Truckers would like the following at SRRAs:

- A change machine (money);
- Showers;
- Play area for kids (some truckers take grand children with them in summer);
- Closed circuit television broadcasting weather and traffic information;
- Satellite TV access at rest stops (some have TVs in their trucks); and
- Power source at rest stops for trucks (new idle law goes into effect and prevents trucks from charging and powering their equipment).

5. What are your communication needs while you travel?

Participants said they talk with family, customers, and dispatchers.

6. How do you typically communicate while you are traveling on the road?

The primary form of communication is cell phones. This group of truckers said the cell phone is making the CB radio obsolete.

7. When you drive, do you ever carry a laptop, a personal digital assistant (PDA), or a web enabled cell phone that can connect to the Internet? (For those who say yes, PROBE for what traveling purposes.) (Do they check highway conditions? Book hotels, check tourist attractions, etc.) (For those who say no, PROBE for reasons why.)

Three participants carry laptops. None of the truckers in this group have a PDA. Participants use the laptop to check for traffic conditions, news, entertainment, to find loads (freight), and for personal finance.

8. For those of you who carry these devices, can you tell me what device you carry every time you travel, if any? PROBE: What device and why?

The three participants with laptops indicated that they always take them when traveling.

9. (Ask everyone) If WiFi services were offered at SRRAs, would you be interested in using this service with devices that you travel with or through a public Kiosk? (If yes, PROBE: How do you think you would access the WiFi, for example using what types of devices?)

Four participants stated that they would use WiFi service at SRRAs. One would not, but said his son who is also a trucker, would use the service. None of the five participants liked the idea of a kiosk because of security concerns. Participants stated they would access the WiFi with their laptops.

10. How often do you think you'd use the service? For about how long would you log on? What would be the main purpose of your Internet use, for example, roadway conditions, book hotel, check with office, etc.?

Four participants said they would use the service once a day for one to two hours to search for jobs/loads/freight.

11. What would you be willing to pay for the service, for example, first 30 minutes free and then \$2.00 after that initial time? (If not, PROBE: Is this because you don't travel with a device that can access the Internet? You don't like to use Kiosks? Why not? If you do travel with a device that can access the Internet, why would this service not interest you enough to stop? If you don't travel with these devices, how do you stay in touch?)

No one in the group was willing to pay for the service. All participants felt the service should be free or sponsor paid.

12. (Ask everyone) Do you ever make use of public WiFi services, for example, in cafés, airports, parks, hotels etc.? (If yes, PROBE: where, when, how frequently, how long, why, and how much they typically pay for using the services.) (If no, PROBE: why.)

The laptop users access WiFi at truck stops, but they do not use any other public access points.

13. Would you feel comfortable paying for extra time with a credit card or would you prefer to use a 3rd party organization like PayPal? PROBE: If not credit card, why not? If Pay Pal, why?

Participants said that if they would pay, they would use a credit card.

14. Would a daily, weekly, or monthly membership to use the WiFi service be of any interest to you? PROBE: Why, Why not?

None of the participants liked the idea of a membership. They prefer to use a prepaid card that is good at any time, but would not like any other type of membership.

APPENDIX C

FOCUS GROUP QUESTIONNAIRE

FOCUS GROUP QUESTIONNAIRE

Evaluating Wireless Broadband System at California Safety Roadside Rest Areas

Thank you for completing this questionnaire. All answers are completely confidential.

1. On a typical week, how many miles do you drive on highways in California?
 - ☐ Under 50 miles per week
 - ☐ 50-100 miles per week
 - ☐ 101-150 miles per week
 - ☐ 151-200 miles per week
 - ☐ Over 200 miles per week, please specify distance: _____ miles / week.
2. Please rank in order of your MOST to LEAST frequent reason for traveling on highways in California? (Please rank from first to last only those that apply to you. Number 1 should represent the most frequent reason for traveling on highways in California.)
 - _____ Business travel
 - _____ Commercial delivery
 - _____ Commute
 - _____ Vacation
 - _____ Recreation
 - _____ Social (visit family or friends)
 - _____ Other, please specify: _____
3. What highway(s) do you typically drive on the most? (Please list in order from highest mileage highways to lowest mileage highways)
 - Highway Number: _____
 - Highway Number: _____
 - Highway Number: _____
 - Highway Number: _____
 - Highway Number: _____
 - Highway Number: _____
4. What vehicle do you typically drive? (Please check one)
 - ☐ Large Commercial Truck (Gross Vehicle Weight more than 10,000 lbs)
 - ☐ Small Commercial Truck (Gross Vehicle Weight of 10,000 lbs or less)
 - ☐ Pick-up Truck
 - ☐ Recreation Vehicle
 - ☐ Sedan
 - ☐ Minivan

- ☐ SUV
- ☐ Motorcycle
- ☐ Other. Please specify: _____

5. Within the last year, how often did you stop at SRRAs?

- ☐ Never
- ☐ Less than once a month
- ☐ 1 to 3 times a month
- ☐ 1 to 3 times a week
- ☐ 4 to 5 times a week
- ☐ More than 5 times a week

6. Within the last year, what were your typical reasons for stopping at SRRAs?
(please check all that apply)

- ☐ Tired and need to rest
- ☐ Use the restrooms
- ☐ Look for directions
- ☐ Get a snack or drink
- ☐ Other, Please specify: _____

7. Do you carry any of the following devices that can connect to the Internet when you travel? (Please check all that apply)

- ☐ Laptop Computer
- ☐ PDA
- ☐ Web Enabled Cell Phone
- ☐ I don't carry devices that can connect to the Internet
- ☐ Other, please specify: _____

8. What is your current marital status?

- ☐ Single ☐ Married ☐ Separated ☐ Divorced ☐ Widowed

9. What is the highest level of school that you completed?

- | | |
|--|---|
| <input type="checkbox"/> Grade school | <input type="checkbox"/> Bachelor's degree |
| <input type="checkbox"/> Some high school | <input type="checkbox"/> Some graduate school |
| <input type="checkbox"/> Graduated high school | <input type="checkbox"/> Master's degree |
| <input type="checkbox"/> Associate's degree | <input type="checkbox"/> Ph.D. or higher |
| <input type="checkbox"/> Some college | <input type="checkbox"/> Other, please specify: _____ |

10. What category best describes your occupation?

- ☐ Manager/administrator
- ☐ Service/repair
- ☐ Clerical/administrative support
- ☐ Sales
- ☐ Professional/technical
- ☐ Production/construction/trades
- ☐ Truck Driver
- ☐ Other, please specify: _____

11. What was your household's 2006 pre-tax income?

- ☐ Under \$10K
- ☐ \$10K - \$19.9K
- ☐ \$20K - \$49.9K
- ☐ \$50K - \$79.9K
- ☐ \$80K - \$109.9K
- ☐ More than \$110K
- ☐ Decline to respond

Thank you very much for completing this questionnaire!